CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

ENERGY EFFICIENCY COMMITTEE

WORKSHOP

INTEGRATED ENERGY POLICY REPORT

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

WEDNESDAY, JUNE 4, 2003

9:30 a.m.

Reported by

Alan Meade

Contract No. 150-01-005

A P P E A R A N C E S

COMMITTEE MEMBERS PRESENT

James D. Boyd, Commissioner, Co-Chairman

William J. Keese, Commissioner, Co-Chairman

John L. Geeseman, Commissioner

Robert Pernell, Commissioner

STAFF PRESENT

Don Schwartz, Program Planning Office

Sylvia Bender, Demand Analysis Office

David F. Abelson, Office of General Counsel

Michael Messenger, Market Assessment Office

Bruce Ceniceros, Energy Efficiency Division

Karen Griffin, Integrated Energy Policy Report

Pierre H. duvair, Climate Change Program

Tom Gorin, Demand Forecast Office

Scott Matthews, Transportation Energy

ALSO PRESENT

Eric E. Worrell, EEW Co.

Manuel Alvarez, Southern California Edison

Michael W. Rufo, Quantum Consulting

Fred J. Coito, Kema-Xenergy

Andrea Horwatt, Southern California Edison

Misti Bruceri, Pacific Gas & Electric

Loren Lutzenhiser, Portland State University

William C. Miller, Pacific Gas & Electric

A P P E A R A N C E S (continued)

ALSO PRESENT (continued)

Jay Luboff, California Public Utilities Commission

Pat Eilert, Pacific Gas & Electric

Kirk Uhler, Electric & Gas Industries Association

Jeanne M. Clinton, California Consumer Power and Conservation Financing Authority

Paul Milne, Procter Engineering Group

Lainie Motamedi, California Public Utilities Commission

I N D E X

P R O C E E D I N G S

COMMISSIONER BOYD: I feel a little bit conspicuous up here because this is a Workshop. But you can't sit up here and be inconspicuous, the logistics of this room make it hard to make this a warm and cozy, friendly place. But this is just a Workshop, and I'd like it to be as open and relaxed as possible.

I'd like to welcome you all to this Integrated Energy Policy Report Workshop on energy efficiency and conservation. Energy efficiency and conservation is one of a number of workshops that the Energy Commission is hosting on the Integrated Energy Policy Report required by the Legislature in Senate Bill 1389 by Bowen in the year 2002.

I notice how sensitive this microphone is, too. This workshop will focus on the nature of energy efficiency as a resource, how large that resource might be, and the most effective ways to maximize efficiency and conservation in California's energy future.

Our purpose today will be to gather input that the Commission can use to develop recommendations to the Legislature on these energy

efficiency and conservation topics.

Therefore, in so doing, this workshop, and the complete Integrated Energy Policy Report, or IEPR as we call it, will contribute to the goals, and supplement and complement the goals of the recently approved Energy Action Plan between the three, let's say, dominant energy agencies in the state, and will provide all of the participants in that plan additional background to help us all implement that plan.

The broad discussion that we envision today also, we hope, will contribute to other state level discussions on the subject of energy efficiency. The PUC is dealing with some more specific topics on energy efficiency in two current proceedings that are before their agency.

They are proceeding on the long-term plans or procurement practices of the state, and the OIR that they have going to examine the future of public discharge administration and programs.

Today we will hear from parties responsible for state-level policies on energy efficiency and conservation, and any comments and questions that any and all of you have out there will help the Commission with its recommendations

in the Integrated Energy Policy Report that we submit to the Governor and the Legislature, and will contribute and influence other policy proceedings that we have going at this agency.

By was of introduction, I'm Jim Boyd, I'm Chair of our Integrated Energy Policy Report Committee. On my left, your right, is Chairman Keese, who is the other member of the Integrated Energy Policy Committee, and we're fortunate enough to be joined today by both Commissioners Geeseman and Pernell, who are very interested and involved in this very subject, and are here to learn with the rest of us, and we have a spate of advisors up here with us, one for each of us, and we'll let it go at that.

With that, I'd like to turn the program over to Don Schwartz and the staff, who's going to provide you a little more background and is going to, let's say, run the proceedings and keep us on schedule and deal with the agenda for today. So, Don, if you would?

Well, excuse me, let me ask my fellow Commissioners if any of them would like to say something, starting with my fellow committee member, Chairman Keese.

CHAIRMAN KEESE: Well, I'll just welcome everybody in the audience, and I'm glad to see we have full participation in the audience, as you will note from previous experience, we have a forum of participation up here at the dais, because we consider this a very important issue.

Commissioner rosenfeld -- I call him our senior guru on energy efficiency -- happens to be in Europe on the subject today, but is not here, but he needs little education on the issue of energy efficiency or conservation. He will be fully participating as we come to our conclusion.

This is an IEPR process. We have, I believe, 9 or 10 other workshops like this on other areas that we will be dealing with. We hope to have a very broad energy policy for the state of California. Energy efficiency places second to none in our concerns, as we work towards energy policy.

But we're going to have to, as the word says, integrate these different interests when we come to an energy policy. We can't just adopt, recommend, a policy for energy efficiency and not take into consideration the other aspects of this integrated report. So, I welcome everybody here,

and John?

COMMISSIONER GEESMAN: No, I don't have anything.

CHAIRMAN KEESE: Robert?

COMMISSIONER PERNELL: I would like to echo what the Chairman has said. As the Chairman of the Energy Efficiency Committee, I'm interested in savings that we can come up with. Sometimes we have to think out of the box, so I'm here to learn and listen. But I want to welcome you as well, and I'm sure we'll have a very productive workshop today.

CHAIRMAN BOYD: Thank you, Commissioner Pernell. Let me just say, just to amplify the importance of this subject, which has already been amplified by the presence of four or five Commissioners -- and the fifth one would be here, as Chairman Keese said, were he not out of the country -- that this subject of energy efficiency conservation was made priority number one in the action plan of the three energy agencies.

So, just to reinforce the idea that it's an important issue to all of us. With that, Mr. Schwartz, if you would take over kindly?

MR. SCHWARTZ: Thank you, Commissioner

Boyd, thank you Commissioners. Let me also welcome you all to this workshop. Before I make a few introductory remarks about what we're hoping to achieve, I want to just go through some really mundane "nuts and bolts" kinds of things in terms of the procedure of the workshop.

CHAIRMAN BOYD: Can everybody hear? Don, you're going to have to get right up close to that mike. They've been working on it to make it better, and I think it's going in the wrong direction. You've got to be right on top of it.

MR. SCHWARTZ: Is this better? What I'm saying is, I want to just go over the sort of "nuts and bolts" of the workshop. And first of all, I hope you've all taken an agenda from outside, because the agenda that was on the web has changed a little bit.

And the next matter is, if any of you would like to purchase lunch, we're going to have somebody who will make a run over to a place, LaBou, to get some sandwiches for you. If you'd like to do this there's somebody out in the lobby, and please go see them before 10:00 and we'll make sure you get a sandwich. You can eat it here in the building, can't eat it here inside the room

I've been told.

Just something about the overall way we're going to do this. Take a look at your agenda, you'll see that we have three speakers that we'll start off with, and they'll make short presentations, about fifteen minutes each. And there will be an opportunity for some Q & A, clarifying questions, of those speakers.

We're hoping not to get into any substantive discussion at that point, but just questions about where they got their numbers, or things about their techniques that they used to derive the information that they're going to be showing us.

Then the rest of the workshop is going to be broken up into a series of panels. We're going to have three panels, each panel is going to discuss a particular subject area. If you've had a chance to take a look at the notice you'll see that the three subject areas deal with potential goals and how to effectively achieve additional savings in terms of program implementation.

For each of these discussion areas we'll have a panel. The panel is designed more or less to stimulate discussion, not necessarily to

provide the entirety of the discussion. And we'll have pretty much a different set of panelists for each panel.

Before the panelists get started we'll have a staff member who'll present some material that's pertinent to what will be discussed in that panel.

We'll break for lunch at around 12:15, have an hour lunch, after lunch there will be an opportunity for anybody who would like to to come up and give any prepared statements, read it into the record, you'll have about half an hour. We're not taking any blue cards, so I'll just say, when we come back from lunch, "does anyone have anything they'd like to say."

You'll all need to speak into the microphone because this is being recorded. So if you speak from the audience it's highly unlikely that it'll get on the record. So please come up to the mike, that position right over there. What else? Okay, that's pretty much "nuts and bolts", anyone have any questions at this point?

Quickly, just to reiterate what was said previously, this efficiency workshop is part of a much larger series of workshops. The efficiency

portion of the IEPR falls within a report called the Public Interest Energy Strategies Report, sometimes referred to as the PIES report.

That report, set out in SB 1389, requires the Commission to look at public interest strategies -- energy efficiency being one of those strategies. Some of the other strategies are load management, renewables, new technologies. All of these other areas will be covered in different workshops or proceedings.

And this PIES report will then actually be a written report that will come out sometime the end of July, when all the other three major reports in the IEPR proceedings come out. Then there'll be an opportunity to comment on that report and the other three reports before the final IEPR Report that goes to the Legislature that comes out later in the fall.

What we're hoping to achieve here in this workshop is a free and open discussion. We want your ideas. We want your comments on the backup material that was sent out along with the notice for this workshop. We'd like to know if we missed anything in putting that together. Is there an aspect of some issue that you think

should be highlighted some more?

But I think most importantly we'd like to come away here with some sense of what your recommendations might be for how to proceed in the three areas that we're going to discuss. After all, this report eventually will be making recommendations to the Legislature for how to proceed in energy efficiency policy areas.

So, with that, if there are no questions, I'd like to move right on to our first presenter. We have Sylvia Bender from the Commission, to make the first presentation. Sylvia is one of the principle authors of this efficiency report, and she has a long history in working in program evaluation.

And with that, I'd like -- Sylvia? I just want -- before she gets here, I just do want to emphasize the fact that I'm going to try to keep us on schedule here. If we appear to be going quicker than we need to, then that's fine, we'll just accelerate the agenda, otherwise I'm going to try to make sure that we cut off when we need to cut off so we can proceed and finish this up today.

MS. BENDER: Good morning. I just want

to recognize the other people that helped me in putting this presentation, even though my name is the one that's up here, and I'm the one standing here. It certainly is not just me.

I'd like to recognize Sherry Davis for helping with all of the graphics and doing parts of the analysis for this. Lynn Marshall for running all of the DSM scenarios, and Kae Lewis for organizing this whole process to begin with. Can you all hear me, if I speak like this? Closer? Is that better? Okay.

We've divided up the material that's in the paper into two different segments. And in this first part, what I'm going to do is talk a little bit about the background factual material that was in the report. We'll look at the consumption trend, program policies, and savings trend. Talk a little bit about the crisis and the potential, which will set up our next two speakers this morning.

And then this afternoon, as we go into the three discussion topics, we'll have a little bit more material to set up each of those as we go along.

The first slide that we have up here

show's total electricity use per capita in California. Energy use is a function of demographic change, economic change, price trends, weather, and changes in consumer behavior.

And each sector is driven by different forces -- population and personal income drive, the residential and the commercial sectors, employment drives, the industrial and commercial sectors.

So what makes up our total energy consumption at this point? Showing here, we can see California at the very bottom here, the most efficient state in the union, across the bottom. This is our per capita consumption, fairly flat going across to 2000.

The United States here, rising at about seven percent, and the rest of the western states up here. Some of the reasons for this difference -- weather, our strong history of programs and standards, and probably to some degree our industrial mix that we have in this state.

To look at what makes up that consumption, here are the components of the 7200 or so megawatts that is the per capita consumption

in the state. The two main drivers here are residential and commercial. The commercial sector is growing slightly faster on a per capita basis than the residential.

And what all this means is that buildings are the main force for electricity consumption, accounting for two thirds of the consumption.

Moving on to look at peak demand, the interesting thing about this chart is really that the industrial sector shrinks the commercial and the residential sectors increase. They are the two main sectors that are driving peak demand in the state.

And again these two sectors account for three quarters of commercial and residential buildings, commercial and residential buildings account for three quarters of peak demand. So what does this say about the end use that we have then?

Air conditioning, in terms of peak. And we're looking only at peak during this slide. Air conditioning is the dominant force. The next largest category is the miscellaneous category, which is comprised of lighting, fans, consumer

appliances, and electronics. Refrigeration would be the third category. The rest of the uses, as far as peak goes, are quite small.

Looking at commercial, the two dominant areas here are again air conditioning and interior lighting.

Now to look at cross-sectors, we've put together here the ten major components of peak demand. The first two, over here to the left again, are the two air conditioning uses -- the residential and commercial air conditioning. Then again commercial lighting. The assembly industry pops up here, and then again commercial over here, which is things like escalators, elevators, and then residential miscellaneous.

The thing to note here -- if you put the two industries on top of one another, the process industry and the assembly industry -- they would equal just slightly more than the residential air conditioning. So, a very large component of peak demand.

If we look at this across the entire building sector, the air conditioning -- both residential and commercial -- account for about 40 percent of building sector peak load. Across the

system, the entire system load, it would be about 30 percent.

So let's look a little bit at going forward here, and looking at growth. The commercial and the residential sector right now are moving at fairly similar rates. Residential is growing a little bit faster right now because of the economy, but it's likely to return to its position as the fastest growing sector.

Industrial is actually growing fairly slowly. If we were looking at this on peak it would be a very similar looking chart. Commercial probably edges a little bit ahead. Looking at gas now, the industrial and mining, which we've put together here into one category, are clearly the dominant sector here.

The major industries which contribute to gas consumption are petroleum refining, food processing, oil and gas, paper, stone, clay, glass, and chemicals. And these together constitute about 80 percent. It's a much more complex market.

We know less about this market in some ways. There's a lot more uncertainly about some of the numbers that are included in the gas market

in general. Looking at this sector, going forward, we see again that the strongest road is in commercial and residential.

The industrial and mining, again, are fairly flat going forward in all of these. The residential probably is the area there we need to pay more attention to.

So how have they, this picture of consumption and peak trends, been affected by the program policies and the expenditure trends? And how have we shaped these? What we see over time in a look at program policy is that there is a long history of expansion and contraction of funding for programs. And quite a series of changes in terms of policy.

Prior to 1996, in the pre-restructuring period, integrated research planning was also prominent, the emphasis was placed on resource acquisition, funding at that period was about, at least $300 million a year.

During the restructuring period, 1997-2000, policies changed through market transformation. There was an emphasis on trying to look much more long-range.

After restructuring we've moved back

again, with the prices of 2000-2001 we've moved back again to a peak load emphasis and a considerable re-examination of some of the policies that are in place now. Funding levels have stabilized at about $228 million a year.

Some of the policy issues that have become more important in recent years are equity issues, the inclusion of other parties besides the utilities and the state agencies in delivering programs, and a much more recent shift, perhaps, to using energy efficiency for the first time to ease transmission constraints.

So what did we get for all these various changes and all these monies we've spent over the years? We have achieved a significant amount of savings, more than 10,000 megawatts and 35,000 gigawatt hours. They're broken down here into their sections at the bottom.

The two bottom levels are the building and appliance standards, then the programs, and then the top segments are two smaller areas, fuel substitution and some other load management programs that are up there.

So you can see a considerable amount of effort here. Conservation and efficiency in this

section includes all the IOU programs and the Muni programs. The state agencies are in the public sector at the top.

Looking at it in a slightly different way, looking at first-use impacts, this graph illustrates sort of the peaks and valleys of funding that have occurred over the years.

And you can see, on the very right hand side, the last spike over there, is the additional money that was put in for 2000 and 2001. 1994 is the highest year of funding, over $340 million was spent that year, and its also the highest year of savings.

So there definitely seems to be a coordination between spending and savings. 1999, we were still collecting some of the data, not all of that was in yet. So that peak at the end there may go slightly higher.

The average over time for all of these programs -- for the conservation and efficiency programs -- is probably about 200 megawatt a year that we've been able to achieve, at least that. In 2000 and 2001 things changed quite dramatically with the electricity prices.

And things changed quite dramatically in

efficiency and conservation. There was a concerted effort involving executive, legislative, and regulatory responses to meet the challenges of the crises. $850 million of additional funding was added.

And the result of that is that peak demand was reduced in 2001 an average of 10.4 percent over the summer months, and consumption overall was down 6.7 percent compared to 2000.

In a study that has been done recently by Global Energy Partners, trying to sum up everything that was done in 2000 and 2001, looking at savings achieved in just that year, they calculated 4.76 million megawatt hours and over 3,000 megawatts, from 200 unique programs that they were able to identify in the state.

So, is there anything left to get out there after this? There is actually potential on the emerging technology front, of course. Our programs in PIER are doing a number of things now with utilities. They're looking at things like reflective roof coatings for the residential market, air conditioning that's optimized for the California climate.

On peak reduction they're doing things

like equipment design guidelines, construction protocols and diagnostic tests that can actually look at equipment that's already installed. This is an area that's receiving a considerable amount of attention now.

Once the equipment is -- we know what is being installed, we don't always know what's happening to it after it's installed or how it's being used.

And the next two topics here, the existing technology potential, and the potential that we might receive from continuing conservation behavior, will be covered by the next two panelists that we have.

And to just sort of set that up a little bit, one of the things that we included in the report is a summary chart from a report done by Xenergy for the Energy Foundation.

And in this they look at what is left out there that is economically viable to capture in energy efficiency. And they ran three scenarios, which we don't need to really think about too much, but they're looking at business as usual as our current funding, the one in the middle, advanced energy efficiency, would be

essentially doubling the amount of money that we spent on energy efficiency, and then the maximum would be four times as much money.

And then there are varying numbers here. What we did, as part of our analysis of this, is look at what impact this kind of spending -- and we picked the middle one, we picked 100 percent increase in funding -- and what would this do to our forecast demand.

And so what we did, or what the result was from this, is that by doubling the amount of funding that we spend on public goods charge programs, we could achieve a 3 percent overall reduction in peak load in 2013, and what we would do is essentially slow the rate of growth across here by 12 percent.

And the other scenario at the top, the low DSM scenario, assumes that we have no spending after 2003, and at that point there would be a rise of three percent. It's essentially another 1,900 megawatts of peak we would need to be ready to meet.

This baseline forecast includes the business as usual, so it assumes that all current programs go forward, and it's an additional same

amount of money, another $250 or so million added tot he top of it.

We did a similar one for gas. Gas, there is much less impact actually of a doubling of expenditures. We only get a .7 percent difference at the end, a decrease.

So, let me summarize this section with the findings we have, based on these trends. Buildings account for two thirds of electricity consumption and three quarters of peak. The air conditioning is the dominant thing for peak load, followed by commercial lighting. The bulk of the miscellaneous categories are for residential and commercial and residential refrigeration.

The uncertainty factor for all of the potential number is slightly higher in natural gas. The trend over time has been that increased spending gets you increased savings.

Changes of behavior were very important in 2001, and additional potential remains, but it may be harder to get because of the type of customer we'd be going after, and the types of industries that we would have to be working in.

MR. SCHWARTZ: Are there questions? Yes? Could you please --?

MR. WORRELL: My name is Eric Worrell. My question is I didn't see anything mentioned in there of addressing tax policy in terms of achieving efficiency?

MS. BENDER: No, there isn't. We actually considered putting some of that in, and we have some material we could add in the final report. We did take it out of our report at this point, so you are correct, there are no tax strategies included.

MR. ALVAREZ: Manuel Alvarez, Southern California Edison. On your charts on gas consumption you didn't include electric generation. Is that something --

MS. BENDER: That's right. These are end uses only.

MR. ALVAREZ: Okay. So how is the electric generation and the gas consumption factored into this at all, or it's not?

MS. BENDER: In terms of those end uses it's not.

MR. ALVAREZ: Okay. So where will the gas consumption and electric generation be accounted for?

MS. BENDER: I think that's going to be

accounted for in the electricity and natural gas part of the report.

MR. ALVAREZ: Yes, thanks.

MR. SCHWARTZ: Other questions? Yes, please come up to the microphone.

MS. HORWATT: I'm Andrea Horwatt, also with Southern California Edison. This is kind a related question to what Manuel just asked, but for the industrial and mining gas consumption figures that were shown, is co-generation included as part of that, since it is both electricity generation as well as typically --?

MS. BENDER: It is not.

MS. HORWATT: Okay, so --?

MS. BENDER: It is not in these numbers for our forecast, no.

MS. HORWATT: At all?

MS. BENDER: Lynn is saying no.

MS. HORWATT: Okay.

MR. SCHWARTZ: Other questions? Okay, thank you, Sylvia. Our next presenter is -- sorry, our next presenter is Mike Rufo. Mike is a Senior Vice President with Quantum Consulting. He was previously Vice-President for consulting services for the western region of Xenergy.

I think the most important thing is that he's basically Mr. Potential in California. He's been doing this work for a long time. And in a minute he will give us his presentation. Okay, thank you, go ahead, Mike.

MR. RUFO: Thank you very much. I want to thank the Commission for asking me to speak today. Like Sylvia, it's not just me up here. As you can see on my cover slide, a lot of folks have been involved in the work that I'm presenting on here this morning.

Fred Coito particularly at Kema Energy. Fred, are you here? There he is. While I was at Xenergy Fred and I worked very, very closely together on this study results that are being presented, as well as the supporting studies behind it.

Chris Ann Dickerson at PG&E, a few years ago, got this whole process underway, really before the energy crisis, in initiating a commercial energy efficiency potential study, which was very fortuitous.

Rafael Friedmann at PG&E has also played a major role, taking over the residential sector energy efficiency potential work. And Jon Koomey

is up here. Polly Shaw's name is not up here, of the Energy Foundation. I always offer Polly to put her name on these things, but she prefers to just have supported the work.

But really, Polly and Jon played a major role in the Energy Foundation study, which are the results that I'm going to be presenting today. But it's very important to realize the collaborative work that went on here.

That the Energy Foundation study was kind of a bundling of a lot of work that went on that was originally done by the California IOU's -- - as well as the CEC, I might add. During this process over the last couple of years we worked for Art and Lynn and Steve Lehman doing a residential energy efficiencies client curve.

So in the heart of the energy crisis all of this was going on, with the purpose of trying to give all some more clarity on what the efficiency resource was looking like.

I'm going to skip this slide, there's some background slides on the history of these kinds of studies. I always throw this silly slide up here just to let people know that, ever since I was a little boy, I've been fascinated with energy

efficiency supply curves and potential studies.

But seriously, I've been doing these studies for longer than I care to admit now, fifteen years. And I think it's helped give me some perspective, but I think I also realize that over those fifteen years there are some difficult issues in this kind of work that we make progress on, but we never fully resolve.

As I've mentioned, the results I'm presenting here are really the culmination of a number of different studies, and we can provide information on that to anybody that's interested.

I do encourage people to go beyond the Energy Foundation study, which is kind of a top line, to the detailed residential and commercial sector studies that Kema-Xenergy has produced for the IOU's. On the Calmat website there's a lot more depth of results and the appendices in those studies.

I think I'm going to blow by our objectives. I think we kind of know why we're here and why do we do this, I think we'll skip that. I'm going to move now to focusing on the results of the Energy Foundation and IOU studies.

And a few words on study scope. The

Energy Foundation study is truly a statewide scope. The underlying utility studies were for the electric IOU service territories. We focussed on electric consumption here.

There are a couple of natural gas studies that Kema-Xenergy has been doing for the IOU's through PG&E on the residential and commercial. And Fred Coito's here, he can perhaps answer any questions that come up on the natural gas side.

We looked at all sectors and vintages, we used a bottom-up methodology -- I'm not going to go into that now, we can deal with that in the Q&A. We looked primarily at the commercially available measures, we did not focus much on emerging technologies.

The original scope and purpose of the study was really to kind of, more in the five-year period. We pushed it out to ten -- we'll talk more about the implications of that later. We used, in the end, a ten-year forecast period.

And we really drove the project around looking at scenarios in terms of both energy efficiency funding levels and energy cost scenarios, because this work was done during the

heart of the energy crisis, and we really wanted to know how much energy efficiency was out there as a function of how bad our avoided costs situation was looking, or what would it look like if suddenly we were on easy street again with respect to our energy costs.

So a few words about the scenarios. As Sylvia mentioned, we looked in the Energy Foundation study at three funding scenarios, in the IOU studies there are four funding scenarios.

Business as usual is a calibrated scenario. It's calibrated to kind of the last five years of IOU programs, primarily over the '96 to 2000 period, not really the 2001 period, which is a little bit of an outlier.

The advanced efficiency is roughly a doubling of that funding level, and a max efficiency is somewhat of a theoretical number. I have a slide at the end in terms of definition of potential, technical potential, economic potential, maximum achievable potential, naturally occurring potential, all these different types of potential.

Maximum efficiency is really a scenario in which you try to capture everything that is

economic, everything that passes a total resources, cost/benefit cost test greater than one. But, I do want to point out that, what does it take to do that, what are the underlying assumptions?

Business as usual averages about, rebate levels that are about a third of incremental measure costs, which is pretty calibrated to what the programs have done historically.

The advanced efficiency gets into a higher incentive level in terms of these types of -- I should also say that the focus of this study was really on kind of traditional, in-the-box energy efficiency incentive programs. Not standards, not other types of policies. I think the numbers can be used for those other purposes, but our scenarios were focused on voluntary kinds of traditional information incentive programs.

So, in our advanced efficiency we looked at paying a higher level incentive, increasing marketing and information activities to make more people aware and knowledgeable of the energy efficiency options that were out there.

In the max efficiency case it's essentially -- you can almost think of it as a de

facto direct install program for the entire population. You have to spend enough money to make everybody completely aware of all these choices, get them to make a decision, and basically provide virtually all of the incremental cost of making the investment.

We can talk about how realistic that is, I think, perhaps in the Q&A. The avoided energy cost scenarios -- you can see here the base was a seven cent avoided cost in terms of an average over the ten year period. The high was a ten cent, and the low was a three and a half cent.

On top of that there was about, in the T&D avoided costs, averaged about a penny and a half. And we also had retail rate scenarios. The retail rate scenarios and the base scenario was the energy crisis related retail rates would drop gradually over time.

We originally used the CEC's, I think, November 2001 forecast of retail rates, as our base, and we ended up sticking with that. In the high scenario, the energy crisis level retail rates persist throughout the entire period.

The low scenario is a hypothetical case that doesn't exist. It would be as if the rate

spikes had never occurred. So, when we run all these numbers we aggregate our results into an overall California energy efficiency supply curve, and what we have in this curve are two axes, one shows us the cost of the energy efficiency in terms of levelized dollars per kilowatt hours saved. And that's where the incremental costs of the measure are levelized over the first year energy savings. And over the service life of the measure.

And then on the bottom axis we show the amount of total electric energy that could be saved with each of these measures, and all of the measures in combination, taking into account the overlap between measures, interactive effects, and we ordered the measures in a least-cost manner to come up with this curve.

So, supply curves are useful, but they have a lot of limitations. They're nice, little, simply two-dimensional representations of efficiency potential, but an energy supply curve doesn't tell you the value of capacity, and a capacity supply curve doesn't tell you the value of energy.

You can also do a curve like this as a

function of total resource cost, which factors in energy and capacity. But, to make a long story short, you can see that, for example ten percent of the total electricity consumption can be saved at a cost of about five cents per kilowatt hour.

The scenarios result in about 1,500 megawatts saved over the ten year period in the business as usual, around 2,500 for the advanced efficiency, and about 4,000 for the max.

I think I'm going to skip this slide -- this is just similar to what Sylvia showed. What we on the team did in terms of just applying our results over time to a straight line forecast of demand in California -- which is not as accurate as the chart that Sylvia showed, which comes off the actual up and dip in peak demand that we've actually seen.

We did cost-benefit analysis on these portfolios, and all of them are cost effective from a total resource cost test. The turquoise or -- well, I'm not good with the colors -- but the bar on the left shows us the total benefit in dollars, present value dollars, over the ten years of acquiring these savings.

And the stack bar breaks down the cost

of achieving the savings into a program administrative marketing program incentives and non-incentive participant costs.

Across the scenarios all of the portfolios are still cost-effective,but you can see that, if you go down to the old three and a half cent the world is combined cycle gas plant, and it's nice and cheap and steady, the benefit cost of the energy efficiency does drop from in the two's, low two's, to in the mid-ones.

If we were in energy crisis mode forever we'd see the benefit/cost ratios on these things closer to the three level. Looking at achievable potential by sector we find that there's significant potential in all the sectors.

What you see here is the fact that historically we've captured most of the potential out of the commercial sector, and in the business as usual case that is forecasted to continue.

What's interesting is you start to see some big jumps in a couple of these sectors, between business as usual, advanced, and max efficiency, of in particular residential. And a lot of that advance efficiency potential is tied up in things like residential CFL's, which have

some uncertainly around them, which we'll talk about.

On the industrial side we find a lot of theoretical cost-effective potential, but historically in the programs we haven't tapped all that much of that. I think there are good reasons for that, it's tough to get into some of these industrial plants and be effective.

Potential by vintage and type -- because we're only looking at ten years, new construction plays a smaller role than the existing stock, that's also because we have very strong standards in the state that are already capturing a lot of the potential in new construction.

A couple of new charts in this presentation, which is a presentation I've been giving around for awhile, I want to put something new in here. And what I did was I went into the Energy Foundation results and, summarizing the graph, the technical and economic potential by sector and end use, to kind of go with Sylvia's chart there, that showed where the peak decomposition was.

And it's kind of interesting, we still see that the blue part of the bar is the economic

portion, total resource cost test passing one. The reddish color is not quite economic under the base of what it costs. We still find that commercial lighting is a place where there's a lot of savings.

And this is sometimes a little bit counter-intuitive, because we know we've tapped a lot of this potential. This is one of the uncertainties in the study that will hopefully be resolved with the new commercial end use survey results that the CEC will have for us, in terms of how much T8 electronic ballast and CFL potential is there really left.

Also, I didn't say yet, but the numbers we have here are not adjusted yet for the hardware efficiency investments that occurred in 2001 and in 2002.

Residential lighting, on an energy basis, has a huge potential. But we all know there's significant uncertainly in terms of the product itself. CFL's have made great strides, I know I've got them in a lot more slots in my house now than I did five years ago. But getting them into as many slots as would be required to hit these numbers is still a challenge I think in

terms of people feeling that the product is fully equivalent in terms of its service.

I'm going to move on, but we can come back to any of this in Q&A or for your reference. On megawatts, we see res central AC, as expected, jumping to the top. We still see commercial lighting, a lot of commercial lighting peak demand potential that we found is in perimeter dimming, daylight dimming, which has a lot of upside.

Cost-effectiveness-wise it's still a measure that tends to be on the bubble. In practice it's expensive to put out the mobile ballasts that are finely tuned, but that's an area where I think, if we get some cost reductions, we can see some real big benefits.

So, in summary, what we found was that achievable efficiency can be significantly increased. Savings from key measures -- 1,400 megawatts from efficient fluorescent lighting and C&I, 1,800 megawatts from high-efficiency air conditioners in all buildings and homes, 800 megawatts from CFL's in the residential sector, and 1,500 megawatts from various industrial process and motor improvements.

The study results, happily, have been

used significantly by utility and commissions over the last couple of years, so I think timing was good. It's not uncommon for these types of studies to just be shelf ware, or to be hidden behind the black curtain of an integrated resource planning model. It's nice to see this stuff being used.

There are a number of considerations that I think folks should think about with respect to what we're presenting. As I said, 2001 hardware is not fully incorporated, mostly because at the time we didn't have that data. I am still not sure we have that data down at the measuring level. I don't know if we will until the suz (sp) and the ras (sp) are completed.

A lot of the potential is tied to measures that have some issues. Where is the remaining T8 electronic ballast potential? It's probably in laggards and smaller customers that are probably going to be a little bit more costly to reach then we assumed here.

I talk about CFL issues. There's a lot of industrial process and commercial refrigeration potential that also is hard to tap in programs, just because these end users are complex. The

businesses are really closely tied to those processes.

And I think it takes some money to get in there and really have an impact, and it takes a sustained focus. I think also, through the restructuring period, there was kind of a shying away from the large industrial customers with efficiency programs for policy reasons.

From a resource acquisitions perspective I don't think we ought to be doing that. There are other considerations as well. Future standards may reduce this potential, that are not incorporated or may be captured is a better word. We have not factored in energy efficiency and evasion, which can increase the potential.

I am hopeful that a lot of the peer activities are going to drive some more options that aren't in this current mix. But we tried to be kind of middle-of-the-road, not too optimistic, not too conservative.

We need to improve our end-use intensity and load shape estimates, and I think the CEC's research projects are going to do that. It's important to keep looking at the sensitivity of this stuff, to avoid cost and rate uncertainty.

There's some work going on that's looking at the hedge value of energy efficiency. We might hear from more of our panelists today about that.

And, with any forecasting exercise, you can imagine there are some major uncertainties with the process of trying to predict what thousands and millions of customers are going to do over the next ten years in response to energy prices and energy efficiency programs.

I think now is a good time for energy efficiency. Having been in the business now for 15 years in California I'd love to get out of the boom and bust cycle. It's difficult to be an implementer and evaluator or anybody who does this every day for a living year in and year out and go through those.

You know, there are reasonable reasons that we've done that, but steadying that would be good for all of us, I think. I think there's been great coordination among the agencies. I'd like to see more national commitment, because I think there are a lot of states out there that have been free riders on the activities of California in terms of the market transformation effects we've

created.

We need to improve our measure saturation estimates, and we're on the road to doing that. I think links to the PIER program are going to be really critical if we want to capture more energy efficiency potential over the next ten years.

And that's it. I hope I didn't -- I fell a little bit behind schedule there, Don. Sorry about that.

MR. SCHWARTZ: No, actually you made up some time. We started late. So, thank you, Mike. Questions? Yes.

MR. WORRELL: Eric Worrell. What plans do you have for looking at replacing CRT monitors and full box-sized computers with laptops and LCD's which are -- you know, my experience, you've got 120 watts probably of fluorescent lighting in the office, and 300 watts of computer?

MR. RUFO: Yes. We did look at office equipment in the study. And you'll see in the bar charts and in the reports some estimates of the potential for office equipment. What we didn't do, that somebody ought to do, is really work that into the achievable potential forecasts.

A lot of those trends are, perhaps, would be called naturally occurring. They're happening because of trends in the market. We didn't focus on those in terms of programmatic strategies. But I thing that's something that needs to be done.

And there are some numbers and some analytical processes, some data, that we have in the study just in terms of how much energy is currently going to the office equipment that could be used to make those kinds of estimates. Would you agree with that, Fred?

MR. COITO: I think that's accurate.

MR. SCHWARTZ: Other questions? I've been told we have phone callers on the line. If those people would like to ask questions, any time we have an open questions and answer period you're welcome to ask questions at that time.

Other questions of Mike? You're going to let him get off that easy? Okay, oh -- David?

MR. ABELSON: David Abelson with the Energy Commission. You said a moment ago that the restructuring effort kind of knocked the efficiency programs back on their heels was the way the slide presented it.

MR. RUFO: The one I skipped over real quick?

MR. ABELSON: Yes. And I'm curious as to how you're defining that, because Sylvia mentioned that there's been a pretty steady $230 million a year from the IOU's alone, not to mention what the Municipals and perhaps other sectors are contributing, that has continued.

So, how are you using that phrase "set back on its heels?"

MR. RUFO: Well, I think if you look at -- and I don't know if I have it in my appendix -- Sylvia's chart of the impacts and it's even worse actually if you look at the spending over the 20 years. You will see a significant trough in the restructuring period.

Now, I don't want to overstate it. California, at least, held on to the darn things. In other places around the company energy efficiency was virtually wiped out by restructuring on the premise that the market was going to deliver the energy efficiency through these wonderful integrated strategies that never came to pass.

At the same time we had the California

Board of Energy Efficiency Process, and you know, some pretty massive changes going on. If you look at the dollars per kilowatt hours saved from that period you'll see that number skyrocket too. Because of, I think, all of the uncertainly that was created during that period.

Now that's not to say that we didn't get some good things out of it, and we didn't have a floor there to keep going. But that is also more of a policy statement that I think, you know, we were told in restructuring to just kind of go away -- the energy efficiency community -- in some respects.

And I think a lot of us feel vindicated by the events of the last five years, that the energy efficiency industry is here to stay and has something major to offer to resource planning. That's a personal opinion, obviously.

MS. BRUCERI: I'm Misty Bruceri with PG&E, and I just want to clarify. When you say standards would reduce the potential in this report, it's actually not reducing the energy savings that would be achieved, but by moving the baseline up.

MR. RUFO: Yes.

MS. BRUCERI: That that's how the reduction would be there?

MR. RUFO: Yes. And like I said, it's more captured than reduced. It's another way of capturing the potential that's out there. But we didn't, for example we didn't take out anything for the current 2005 cycle standards, so those would come off I think of the numbers that we have here.

MR. SCHWARTZ: Any other questions? Thank you very much.

MR. RUFO: Yes, thank you very much.

MR. SCHWARTZ: Now, our next presenter is Dr. Loren Lutzenheiser. Dr. Lutzenheiser is the Associate Professor in the School of Urban Studies and Planning at Portland State University. He's got his doctorate in Sociology from UC Davis.

He's published works in the area of the human dimension of energy use, as opposed to the purely technological dimension. And he's currently evaluating the consumer and institutional behavioral response to the 2001 energy crisis. So we're very lucky to have him here today. And with that, Dr. Lutzenheiser?

MR. LUTZENHISER: Thanks a lot, and I

feel lucky to be here as well. And I was just reflecting on the fact that the customer -- consumer in this case -- is sort of front and center in policy, which is really sort of a first almost about 25 years.

I'm sort of reflecting on the research that we've been doing with the Commission on consumer response to the 2001 events, and realized that probably the Ford Foundation study in 1978 -- that in fact David Freeman was responsible for launching -- may have been the other largest sort of serious study of consumer response and consumer behavior related to energy.

So I think this is timely. We undertook this research because 2001 offered, it seems, to Scott Matthews -- who I have to give all credit for this -- a unique opportunity to see what kind of flexibility there was in the consumer side of the system as far as behavior might be concerned.

I mean, if it wouldn't happen then when could it happen? So we should say something about limits and form and so on and so forth.

I think, to sort of get to the end of the presentation, we've actually learned several other things as a result of looking at consumer

response here, including the fact that there may have been some fairly significant changes in the way that Californians think about energy, and I think some new opportunities for their participation in energy policy in the future that we haven't imagined in the past.

Okay, I'm going to go quickly through some of this stuff, because I have way too much here. The research questions -- we're trying to say what was the behavioral response in the summer of 2000, what actions did people actually take, what energy impacts might those have had, and then ultimately how did this response evolve or change over the subsequent years.

I won't go into the methodology in any kind of detail. Anybody who wants to talk about that we can do it.

It's a scientific study based on two ways of residential surveys, with matched utility billing information obtained from the utilities for these households, coupled with a separate set of samples from the utilities of 5,000 households each, in which we don't have survey detail information, but we have detailed consumption information which we've matched with weather

information and so on.

More details of the sample, reasonable response rates, and of 1666 year one, 850 in year two. The first survey was done in early fall of 2001. The second survey was done sort of late fall of 2002. What are the lessons learned?

Well, sort of run through quickly -- what we learned, then we're going to try and move on to sort of what we think, what we hope we've learned from the second year survey and what may happen in the future.

From the first year survey I think we can fairly clearly say that there was unexpected consumer demand elasticity -- and I see that the Powerpoint, when it got sent through the e-mail, did a few funky things here too, but that's okay.

Unexpected consumer response, the changes were not weather-driven, I've got a weather analysis here that we can run through pretty quickly. There still is a little bit of questions, I think, about that, but I think it's fairly well answered now.

Changes in behavior rather than efficiency, installation of hardware improvements were probably the most important part of the

study. Willingness to control air conditioning -- that big target load that we just saw in Mike's presentation is a big part of the story.

However, this is not a uniform response across the population. It's segmented. Some evidence we have now of persistent behaviors that were adopted during the crisis period, and in fact, as far as we can tell, very frequently price was not the primary driver in making these kinds of choices. But sort of civic concerns.

So, what did people do? First of all, about 75 percent of the households actually reported taking some conservation action in year one.

And I should say, too, that we looked very closely at the biases in our sample, in our response bias, and all of the results that you'll see from here on out are weighted at utility territory level by ethnicity, home ownership, and single family multi-family ownership and so on.

So we're adjusting as much as we can for under-reporting in some of these segments. Three quarters of the population reported taking some kind of action and more than one, more than sort of symbolic.

This means that they had to sort of attend to different kinds of things that they might be able and willing to do. I'll go through the weather stuff pretty quickly.

The CEC's analysis of system level load shifts over the three-year period, adjusted for weather and economic differences, shows these kinds of changes, with a pretty significant decline, on an order of five percent, I think, in 2001, and some rebound in 2002.

If you look at it at the utility level, which we're doing here -- and we have these kinds of analysis that we've performed on a utility by utility basis. What we're looking at here is cumulative heating -- the top bar is simply cumulative cooling degree days in the crisis period in the bottom slopes and graphs on the same chart are cumulative consumption.

And we see that 2001 was lower than 2000. In fact, 2002 is tracking right on top of 2001, that's the latest point in the data series that we had. But when you look at the household level -- and I won't go into nuances of this analysis right now, but we can talk about how we did that -- taking weather into account and

consumption at the household level, and then taking differences in the utilities.

We see that in fact those results carry through to the utility level. The one difference here is perhaps San Diego, which sort of experienced its crisis a year earlier. And that's another story we can talk about. Okay.

Changes in behavior as opposed to installed measures. Pretty clearly, pretty simply the story -- while people did report installing a variety of measures in response, ranging from CFL's to new air conditioners and so on, there really wasn't time in most cases for consumers to really take those kinds of actions.

In fact, well over 80 percent of those responses that people actually reported to us -- and these were self-reports without prompts -- were not hardware measures. They were changes that they made in behavior.

Air conditioning was an important part of that story. It turned out that a third of the central air conditioning owners that we talked to actually quit using their air conditioners all together. And about a similar number of room air conditioning folks.

These are the actual sort of array of behaviors. And what's important about this, what we did was separate these out -- and I don't know if you can actually read these very clearly -- but the bars on the left are, I'm going to figure this thing out.

Here we go. The bars on the left are the hardware measures here. So we've got shell improvements, light bulbs, CFL's and other reports of low energy bulbs appliance purchase. Here we have an array of behavioral responses, and we're trying to associate them with particular control regimes and end uses.

So we've got lighting behaviors, changes in the use of small equipments, large equipment might include pool pumps. Behaviors that evolved not using the AC at all, other heating and cooling behaviors -- which could be more moderate use, or strategic use of AC, behaviors that had something to do with water, because that was a category that people were reporting in interesting ways.

I'm going to go into that too. Peak control behaviors, and then sort of vague responses -- trying to do the best we can to conserve, so and so forth. But what's important

here I think is that people move immediately to lights when they have the opportunity to do that.

And then in fact a surprising number of -- and shutting off equipment of one sort or another -- a surprising amount of people are willing to sort of entertain thinking about doing something with cooling.

Just a quick aside here too, though. If we think that lights are trivial, cumulatively -- this is a graphic of cumulative residential sector consumption from modeled results from the Commission. The lighting, miscellaneous electronics, and these kinds of things are really a fairly significant effect, if they're just sort of taking their toll or having their effect day after day, hour after hour, and so on and so forth.

Reductions were not evenly spread across the population. We did a number of analyses to look at this, using actual consumption data to see where the savings were coming from. it turns out it's a minority of cases, and this sort of squares with what we saw, say, with about 35 percent of households, 35-40 percent getting 20/20 rebates and so on.

And then in fact not all of those cases were sort of stunningly conserving, and so on and so forth. And we have a variety of ways of looking at this analysis, and we can go into it, too. But when you start parceling out where actually you've got effects, it turns out it's in a minority of the cases.

And again, this whole issue of price, we've got a lot information in terms of how people think about price, and we've also taken a quick look at how price changes actually took place on a utility by utility basis, on a month by month basis, on a tier by tier basis throughout this thing.

And to say that there was much of a price effect I think would be a large overstatement. In some cases there were fairly significant increases in prices for parts of the population, but not necessarily coincident with the real crisis conditions, or with the periods in which we observed decreases in consumption. And it certainly wasn't across the entire population.

At the same time consumers reported very serious concerns about the situation, and a willingness to act on behalf of others in

California and so on. And we also asked at that time about views of government programs and utility efforts to encourage conservation, and there was a good deal of support for that.

Let me go into this fairly quickly. Motivations to conserve -- and I see this didn't translate very well through the e-mail either -- but basically what was held here are very important or somewhat important, read the top two of these. This is what we think is going on here.

The blue is where people say these are unimportant motivations. This one is to qualify for a utility rebate. Do your part to help Californians through a tough time, do what you can to avoid blackouts, sort of a generic be frugal, use resources wisely to protect the environment.

And, I think, now to the second survey in our continuing analysis after the crisis period. The behavioral changes persisted long after the immediate crisis had passed. Both in the early fall, I mean this had been, when you think about it, when we started talking to folks in September/October 2001, FERC had frozen the wholesale rates I think two months previously I believe and there was a general sense that the

lights were not going to go out.

In fact, it had been six months plus since there had been any blackouts or serious threats of blackouts. People were at that point reporting significant actions, and this followed up more than a year later in a variety of cases.

A majority of households --- these are sort of the main points -- reported continuing some kind of action, some reported abandoning some. Again, there's segmentation. What did people report continuing to do? Same kind of a graphic that we had before.

Lights are still up there. The other heating and cooling. If we take just the people that we talked to in the second year, went back and looked at their first-year behaviors and put them on the same metric here, we can see where we've got sort of a falloff taking place.

But also we've got people reporting some new things, and actually at a slightly higher rate. 20 percent of the households reported additional conservation actions, this is in your handouts. It's interesting for marketing and targeting purposes.

About eight percent said that they

weren't continuing. Why weren't they continuing? These are pretty vague responses. What you start to see, you get a sense that in fact -- I think this is the one I want to return to at some point.

It's easy to slip back into old ways. We sort of sensed among consumers that this is sort of a set of habits that you sort of pick up and you acquire. But also, if we take a look at the people who were the savers, and these were people who would be among the -- in terms of major consumption change -- in say the top 20 percent of the sample, and you're one, this is how much you've been thinking about energy issues, how much concern basically, a concern measure, and it's a good deal.

But you can see that there's actually some sort of major, observable decline in the second period, which we would expect. We still think that there is considerable potential for consumer actions in the future, that in fact consumers are willing to respond to credible requests for demand savings under crisis conditions in particular.

Many may have just discovered earlier habits and patterns that they may have

subsequently abandoned, but certainly know how to do and could be readily recovered in an emergency, particularly in emergency situations.

And they report continuing concern and willingness to conserve. Which I think is interesting. I mean, they don't have to tell us these things. I mean, they have no particular reason to have any great affection for the Energy Commission, the state government, Washington State University, you know.

An interviewer calls them at dinnertime in November, a year and a half after the energy crisis is over. And yet, a significant number of them say that they believe that this is a serious problem, and warrants some kind of consumer involvement in the process.

A graphic of questions about seriousness. Are these serious problems or not serious problems? These are huge in polling kinds of studies. What are the problems that you think will be serious in the future? Shortages of energy from other states, transmission system that can't keep up with growing demands, rising energy prices -- which they expect -- increased pollution, nuclear waste storage, global warming

even.

So I mean, you know, these are fairly serious, and this is a fairly representative sample of Californians. Through the questions on the importance of efficiency and renewables as policy issues.

Again, very important, somewhat important, continue government-sponsored programs, encourage efficiency by households, businesses, renewable sources of energy. Very high levels of support.

And this has to do with some views about how the energy system should be regulated or de-regulated. I thought I took this slide out -- it's some interesting stuff, we can talk about those.

So, we see potentials for further action in several areas. One, very clearly, is the traditional DSM policy target and market transformation policy target, but has to do with appliances.

When we ask people if you have any appliances that are conceivably old enough to replace, and if so what are they, this is the list that we got, and I think it's really very

interesting. Because refrigerators appear at the top, of course, but second and third are central AC and furnaces, which one really wouldn't think about, and of course clothes dryers.

If we look at what people actually replaced in that two-year period it's a very interesting pattern. Refrigerator is right at the top of the list, and I think that's sort of an obvious policy target, but did they replace their furnaces and air conditioners? Well, no of course not. Very rarely, in fact.

I mean, these are the things that I think they may recognize some problems or issues with, but they're much more costly and embedded in the structure. They're the kind of things that you don't go down and buy at the appliance store. They're things that you have to get contractors in for, and so on and so forth. What they did buy, though were washers and dryers, a lot of electronics, and so on and so forth.

However, three quarters of the purchasers of new appliances claimed, said, believed, that they took energy into account when they made those purchases. Whether that's true or not, at least it's an indication that part of the

value set now includes thinking about energy in these terms.

You look at dwellings and systems -- and we've done some work actually trying to associate energy savings with particular conservation behaviors -- they tend to leave out. The models are not stable yet, they behave in a variety of different kinds of ways.

The two though that tend to be significant regardless of how you specify the models, taking into account a host of other factors that have an influence on consumption -- including weather and house size and associative demographic effects and so on -- are impacts associated with building shell improvements.

These seem to have had a measurable effect on actual measured consumption, and voluntary non-use of air conditioning seems to have a significant effect. So I think, we think that, very clearly -- although these are tough nuts to crack in efficiency policies -- sort of major building improvements, system improvements, including higher efficiency air conditioning.

Non-AC cooling, which is something that Peter has been working on, I know. And improved

behavioral and automated management of shell and temperature and so forth. Which seem to be things that people are undertaking on their own, and are willing to do, may in fact be reasonable policy targets.

However, consumer awareness is a problem. There are relatively low levels of program and incentive recognition in both of the surveys, so better informational efforts I think would be part of the story. Only 37 percent had ever heard of the 20/20 rebate program. That should be about the number that we see that rebate.

In fact, of those, in the total sample, only about 18 percent, I think, thought they had received a 20/20 rebate, whether they had or not. In terms of overall program awareness, are you aware of any programs to conserve energy sponsored by a local program or utility or whatever? Fairly low levels, 38 percent awareness of any programs, like they even exist at any point in time. Of those, seven percent took advantage of any programs.

Now, measurements problems -- and we can talk about those and a variety of things in terms

of what program is -- what's going to come under that heading, but these are fairly low levels of awareness, particularly when you'd expect some sort of social desirability effects with over-reporting. Okay.

To cut to the chase in terms of what the policy impacts or implications of this might conceivably be. In addition to the evidence that we have of this sort of natural experiment, that in fact there was greater flexibility in response than we had imagined that there could be, theory would suggest that in fact people will respond.

I mean, we know a lot in social marketing, we know a lot of behavior change theory. Social science has been looking at some of these issues related to energy for 20+ years or so, although it's a relatively small group of us that have been doing that.

And there's a literature that suggests that in fact if the problem is believed to be real, if it's perceived to be an important problem, it can be real but it doesn't have to be particularly important. If in fact action is possible, if there's action that I can take or you can take -- that's another important ingredient

here -- is it reasonable to expect me to do this kind of thing.

Is it reasonable to expect me to use candles, you know. Or is it reasonable to expect me to do my laundry at midnight, and so on and so forth. And will the cost and benefits be equitably distributed? Am I going to pay more than somebody else, or why is it that I'm not running my air conditioner while the person down the street gets to use there, and they've got a different deal.

So if these ingredients are in place it would make sense to expect some level of participation in policies and the support of policies and programs on the part of consumers. And in fact, the data from our survey sort of bear this out.

When we asked people sort of extreme questions in an effort to try and see what kind of extreme responses we can get, then we'll say "does it make sense to ask citizens every once in awhile to reduce their energy use to avoid blackouts and keep costs down?"

Now, this seems like an easy one. But in fact it gets at something that we've

understood. There have been some sort of thoughts that hey, if we live with an energy system that's increasingly precarious and we can't even keep the lights on, I mean, are we living in Bangladesh, or what is this, you know?

We could expect some sort of -- you know, people to say that's not how a system is supposed to work. Well, in fact a large proportion say hey, that would be a reasonable thing, I think. On the other hand, would it be worth it for me to pay a little bit more in order to never have to worry about this. Shouldn't I be able to buy reliability?

This surprised me very, very much. They're not willing to give blank checks, write blank checks, for a gold-plated energy system.

How tough was it to conserve? A couple of questions get at that. In the first year we said how much difficulty was this? What was the effect on your quality of life? Significant decrease -- three percent. Made you somewhat less comfortable -- 19 percent. And remember these are people in California not using air conditioning in a lot of cases. Had no serious effect -- 54 percent. Possibly improved quality of life -- 21

percent.

Well, by the time we get to 2000 and phrase the question a little bit differently, my conservation efforts have involved real sacrifices, about 40 percent remember that they had sacrificed, even though at the time it didn't seem much like a sacrifice.

And are there things that you would refuse to do? Yes, sure, there are things that people won't do. Here's some of the things that they offered.

Here's a sort of hypothetical policy matrix that takes these characteristics of policy involving consumer response and sort of looks at well, what are the class of things that are on the drawing board that we might ask them to do?

Okay, ranging from there's a system emergency, can you help us out? Or critical periods, you know. This is a very unusual situation, but it's a hot spell, and we need some response from you. Will you participate in conservation and efficiency as a matter of course.

What about remote load control, what about something like dynamic pricing at time of use. Well, these are just hypothetical sort of

fill-ins here, this is sort of a longer term policy exercise.

So you say well, what goes in these cells? Well, based on what we've seen, we'd say that, in terms of emergencies and critical periods, most people probably perceive them to be real. Mostly they probably believe that it's important. That you could actually take action.

That it's sort of a mixture of well, yes and well, no. It's going to be a segmentation of the population. Maybe with the yesses a little stronger, well, they're in caps there. Is it a reasonable thing to act yes. Is it equitable? Well, it depends. If you're on special equipment or whatever you might not think it was equitable to be asked for something.

Well, the point is here, that I think we have evidence of an ability I think to expect some consumer response in these circumstances. Some, I think, increased level of participation in these circumstances. We have empirical evidence in the past that you can get people to participate in dynamic control regimes of one sort or another, although we can learn something about how and when that works.

Dynamic pricing, I think, is another issue. Where, in fact, we don't know if people perceive it to be an appropriate response to a real and important and actionable and equitable kind of a situation.

A couple of quick caveats, looking at the two extremes in that table. What about warnings or critical periods? When we ask people if they remembered hearing about warnings about 73 percent said that they had. When we ask them if they were able to take any action during the warning, only 40 percent said that they did, 60 percent didn't.

And on the other extreme, if we talk about things like peaks, it should be please us I guess that in fact when I say do you know what peak is, when a peak is, about 65 percent of the population think it's in late afternoon. About 35 percent of the population thinks it's some other time of the day.

Which means if we're going to develop policies around that we're going to have to help people understand what a peak is.

So, to sum up then. In short, we observed an unexpected flexibility in consumer

response that weather and money don't necessarily tell the story, although they're always going to be part of the story.

There were significant system benefits, although I must say that if you take a look at what the actual incremental system effects are, they're not huge. The consumer response has been persistent through time. People are serious about it, although it surely is changing over time.

And will continue to change. With added activities and abandoned activities. People however, it strikes us, express willingness and have done this now at two different time periods to participate in solutions to energy problems.

However, consumer response is segmented. Everybody isn't equally willing to do this. And different people are in different situations, and so on and so forth. It's not an automatic response that you can turn off and on like a power plant.

And it requires, we believe, a much better understanding of what an appropriate bargain is with a customer or class of customers. About what they're willing to do. And we can talk more about what that might look like, sort of

around dynamic pricing and rate regimes and rebates and so on and so forth.

Because in fact what we're doing when we're asking consumers to play a larger role in energy system operations is in fact to make different kinds of bargains with us than they have in the past. In the past they've gotten a bill, they've gotten a rate arrangement, we've supplied the power, they've paid it, and that's pretty much it.

Final, final thought then. I think we've come a long way since the Ford Foundation study. And I think this study makes a significant contribution and we've only touched the surface of it in this presentation today in terms of what it is that we know and what we're continuing to find out.

However, we need to find out considerably more about consumer decision making and consumer behavior in an energy system that increasingly depends upon intelligent consumer response.

We can't simply assume it, and we can't simply assume I think if you show people price signals or send them informational messages or

pager signals that in fact that's enough to assume that we're going to get an effective and reasonable response, if we want to craft a reasonable, fair, and effective energy policy for managing that system. So, thank you.

MR. SCHWARTZ: Thank you, Dr. Lutzenhiser. I think you've given a very good picture of what makes energy efficiency so much different from some of the other resources that are out there. Questions?

CHAIRMAN BOYD: I have a question, Don.

MR. SCHWARTZ: Yes.

CHAIRMAN BOYD: Your last slide leaves me a little uncertain. And the question was formulated before I saw your last slide. But I've been fascinated with human behavior and behavioral economics for quite a long time. And come from a school of thought without any supergood foundation that repetition of message is necessary to keep people interested.

But I also don't know when the Chicken Little Syndrome slips in. I mean, how much can you keep talking to the public about the need to conserve before they just give up on you for having done nothing to take this problem away from

them?

MR. LUTZENHISER: Yes, I'm having exactly the same thoughts. I was very surprised at the secondary response that we got, in part because of that. I expected people's attention to be much shorter attention spans, and something like the Chicken Little, Boy Who Cried Wolf type of thing.

And I think there's certainly going to be some of that. And again, I think part of this is a segmentation story. You're not going to reach all the people all the time. Some people are much more amenable to these kinds of messages.

At the same time some folks have an awful lot more to save, and an awful lot more to contribute in a demand reduction scenario, because they consume more. There are people who are in different life cycle stages that are better able to act and are more receptive to messages than others.

So, with that said, I think it's a segmented response. But I think one of the things that's happened, hypothetically -- and again this is social science, it's not rocket science. But that also means that this is one study, and if

this were even public health studies we would be reproducing this in different aspects.

And we're talking about doing some of that now. Trying to talk to consumers about what sorts of responses they would seem to think is fair, and then it's sort of a behavioral economics mode. what kind of contract are they willing to make?

But with that said, this is sort of one study. So I'm sort of reaching out here, but my hypothesis is that one of the reasons we're seeing this persistent response, and we're not seeing people abandoning it, is that the events of the last couple of years changed people's understanding of what energy is about, and what the energy system is about.

I don't think they take it for granted any more. Now how long that's going to stick I'm not sure. How long the energy system has to behave reliably before people forget that. But I think it's possible that energy now has been, as the sociologists would say, it's problematized for people.

It has the same status as air pollution, sprawl, congestion, it's a fact of life in some

ways. Whether this is a good thing or a bad thing, I don't think people take the energy system for granted, necessarily, any more in California.

So I think there may be some openings here because of that heightened awareness to expect a higher level of cooperation than we might have ever expected in the past from some groups. Based on the evidence, that's all I've got.

CHAIRMAN BOYD: Thank you.

MR. SCHWARTZ: Yes, Questions from the audience?

MR. MILLER: Bill Miller, Pacific Gas & Electric. I'm interested in how people react to other kinds of crises, because i found myself looking at the numbers, and it's really interesting and fascinating abut how people do react to them, but I think one context I don't have is, well, how do people in South Carolina think about storms which happen periodically -- I mean, I don't know the right comparable example, but certainly there may have been a study that may have been useful if there were some sideboxes along the way that kind of say well, here's what we found here, and here's a reference for it, another area.

And I just wanted to add a footnote to your comment. I think something like, I mean I don't know the number -- between $50 and $100 million has been spent -- was spent on 20/20 and general awareness advertising and it is an issue of when people stop watching and stop paying attention.

I don't know the right answer, but it's one of the problems that we face. But I think, to go back to my point about what is an interesting comparison of these results in other comparable kinds of situations would be helpful.

MR. LUTZENHISER: Sure. We know that people try to construct normal lives, and they get over things like disasters. There is a body of research on disasters, in fact, we talked about this and I'm not an expert in that area, but I think you're quite right, it would be quite interesting to look at things like the destructive effects, how long they last, and what kind of changes they work.

They do make changes, I mean, one of the things that follows disasters are things like levee systems and insurance and so on and so forth. We put institutional responses in place

and there's a certain lore about it, but one of my senses is that it may be fixed generational.

It may have a much larger effect certainly who are of an age to experience it in certain kind of ways, and then it undoubtedly fades. But I think that's a good point.

I think the other is that there are other literatures that are relevant here that have to do with things like recycling behavior and other kinds of consumer behavior changes. There's an awful lot of stuff in public health now where efforts have been made to encourage, facilitate, induce, large-scale behavior change for public health reasons, and there's a fair amount of success there.

My sense is that whether the California marketing campaign is well-informed by that, or its just very creative or lucky or whatever, a lot of those television ads really sort of I think hit a cultural chord with people, it may have had a good effect of that sort.

MR. SCHWARTZ: I see a couple of more hands. Dave?

MR. ABELSON: David Abelson. Actually, the last question and your last comment go to the

point I was wanting to raise, but I'm sort of struck by the analogy to the smoking issue. Because we did have a crisis here, but in some respects it's an incremental crisis by its nature.

I mean, you don't really end up with a shortage until you hit that last megawatt in the absence of a market manipulation problem like we experienced in 2001. And I'm just thinking that that's potentially a tremendously useful analogy, because we've been at it for 35 years in smoking.

California's really interesting. I mean, I'm an ex-smoker, and I know that, in this state, public smoking is rare. But you go across the border to Arizona, or you go to France or you go anywhere else, and notwithstanding 35 years of information, all kinds of efforts to tell folks what's on the horizon if they don't knock it off, the behavior doesn't change.

So I think one of the questions that would interest me is what if anything has California done in an incremental area like smoking that actually has made a difference here when it apparently hasn't made a difference in other places?

MR. LUTZENHISER: I think that's an

excellent point, and something else that occurs to me as you say it it that Californians are in fact sort of used to being addressed and persuaded on a variety of these kinds of topics. I mean, what effect has anti-smoking advertising had on energy use?

Well, maybe not a lot, but it sort of sensitizes people to find those kind of messages credible. What about water? What about a variety of other kinds of large-scale systems and public concerns that have been an object of social marketing in California for decades.

MR. RUFO: Mike Rufo, Quantum Consulting. Loren, I was just wondering about the price dimension. And it seems very difficult to, I mean there's a lot of evidence that price wasn't a factor from your research, but in my gut I'm still bothered by that and I'm bothered by it partly because it was such an odd environment that the price effect was kind of lagging in manifesting itself through headlines before it became a direct cost. That's question one.

And then number two is it's very encouraging your results with respect to the old Jimmy Carter sweater problem, and do you think

that we're beyond that, at least in California?

MR. LUTZENHISER: Yeah, I think we may be. I've thought about Jimmy Carter a lot in the last couple of years and I think maybe we are beyond that in California. There's a valuable lesson here, that I think public figures can talk energy conservation and apparently not be accused of suggesting that the world is coming apart around us.

In part because I think people look around and there's a -- if we can look at a variety of polling results there's a generalized feeling that the world is coming apart around us. And so that's not a bad message any more. I think, in fact, you know, sure the energy system has problems in the same way that we have air pollution. We have an ozone alert that says you have to stay in your house today.

Well, okay, I guess I'd rather get an energy system alert, and I'd like to think there's something I could do about the energy system. If I could have some efficacy there, i may not be able to in the ozone alert kind of situation. I think it comes down to something that came from some other research that we did.

I'm going to get to the price question, but the work we did looking at business choices, business and government choices to adopt conservation during a crisis, suggested that we developed a model that suggested that three factors were pretty important. We called them concern, capacity and condition.

You had to care about it, it had to be meaningful and real, you had to have some level of concern. Having said that you had to have the capacity to act, either inside the organization or in the supply chain or whatever, and having said that even if you had that capacity, the conditions -- whether that had to do with the market conditions, the conditions of your crop in the ground, the conditions around you had to be amenable to that change, or you wouldn't make those changes.

I think the same model works quite effectively in the residential sector. We just haven't really thought seriously about how to apply it there. I think those ingredients have to be there.

Now, price. That's sort of a go-to concern, I would think. And certainly price has

to be a part of this story. And I'd be the last person to say yes, it isn't. We asked a number of people a questions about prices, including what do you do with your utility bill.

I think about 60 percent say they actually look at the numbers on their utility bill when they pay the bill, maybe it's not even that high. The other 40 percent either pay it without thinking about it, or don't even see it, because somebody else is doing it, or it's a, you know. so getting the price signal is one thing.

In the California situation, I mean we can go through this, San Diego's price increases happened earlier, SMUD's took price increases in the spring -- there could conceivably be a price story in the SMUD case. PG&E's price increases I think were implemented in June, we didn't see those until July, maybe August. Those were high-tier increases.

Edison's were similar. LA had no price effect. And then there's a lag. You know, you figure out what the normal bill is supposed to for August, and then does this price increase seem to be a significant one?

The research that we have shows that

people aren't attentive to marginal costs, their per-kilowatt hour cost or any of these kind of things. They're attentive to the total bill cost.

So the short story answer is that I think the price is part of the story but I think we have to look much more closely at how price works for different customers under different circumstances. I mean, we need to decompose those elasticities to really figure out who's responding in what ways, how and why.

MR. RUFO: I guess I might have meant cost as much as price in the sense of, you know, you're seeing headlines that say $10 billion is blowing up the economy. That's some kind of price effect, but it's not individual --

MR. LUTZENHISER: No, I quite agree. And people said they were concerned about cost, and they certainly are. They're not attentive to this.

MR. SCHWARTZ: Thank you very much.

CHAIRMAN KEESE: Don, can I get, make an observation over here? It seems to me that one of the important ingredients in the reaction of the public is that they've been sensitized in California to the issue of energy efficiency.

Anybody who's built a home knows that you have to meet new, higher building standards. And that means anybody who's involved in the construction industry of residential or commercial buildings is. And we've had a pretty good effect on appliances. Anybody who shops sees markers.

So that there is a certain sensitivity that's been ongoing for the last 20 years in California, which sets them up to understand a message that says now's the time, and here are some of the strategies. Is that --?

MR. LUTZENHISER: I quite agree. And I think we wouldn't have gotten the response without that background probably. In terms of persistent response. Sure, we might have gotten a sort of a save the system kind of response quickly for a few days or something, but no, I think that's an important part of the story.

CHAIRMAN KEESE: And therefore we should have a greater potential in California than in perhaps New Mexico or Arizona where they may not have had that basis in the past. I mean, they may have more potential savings, but we may have more potential in getting the public to respond?

MR. LUTZENHISER: I think that's right.

I think that what we're seeing here are at least espoused values that are very strongly represent the population in much higher proportion than -- I was going to say that I find incredible, but I've seen it twice now.

For example, in the general population, if you ask some questions about environmental protection in a very vague way you'll get about 55-60 percent support levels, and we've gotten that for the last 20 years.

This kind of stuff that we're seeing here, this 20 percentage points higher than that and so on, is -- across questions and across times -- is some credible evidence that something of the sort that you suggest is actually at work here.

MR. SCHWARTZ: Quick question? One last question?

MR. MESSENGER: My question has to do with sort of how the region responded as opposed to how California responded. Because one of the things I think we learned is that we are not in fact an island in California, that there are a lot of players that affect our electricity system.

And my specific question is to what extent have their been any studies done to look at

the various types of public awareness campaigns and/or programs in other states. And then compare that response to what happened in California.

For example, I know there were lots of campaigns in Washington, there were campaigns in Oregon. There was a limited campaign in Arizona. There was a big campaign in Utah.

Are you aware of any results that you could use to sort of learn from others and see to what extent the California response was either atypical or typical of what else happened in the rest of the region?

MR. LUTZENHISER: I'm not aware of those studies. Enough time is passed that it might not be easy to do those studies. It might be interesting to sort of go back and see what we could find out about media buys and content.

Because I was in a couple of those places at the time, and in California. And while certainly the crisis, the problems were region-wide. While there were policy statements made and pleas made by public officials in those states as well -- and some advertising -- the level of visibility was nowhere near what it was in California.

And I'm not aware of any serious efforts in any of those places to really look at those effects.

MR. SCHWARTZ: Okay. We are going to transition into the panel format. what I would suggest is that everyone get up and stretch for a minute or two. This is not a break, but just --.

And will the panelists please come up to the table?

(Off the record.)

MR. SCHWARTZ: We're going to get started here. If at any time you're having trouble hearing me or anybody else here, just yell out you can't hear.

When you come up to speak, please identify yourself and your organization, and when you're through speaking if you'd be so kind to give the Court Reporter your business card, so he can get your name and your spelling correct.

What we're going to do now is I'll introduce the panel that's up here, it's going to be a little cozy, a little tight, but I think -- and everyone will have to share a microphone, but I think we'll survive.

This is the first panel, and in this

panel we're going to discuss some of the implications of potential. What might be the correct number to consider, how much should we rely on this potential number, and other issues about potential, what might it cost to realize this potential.

Joining me here on the panel, we have, as you've already met, Mike Rufo, Loren Lutzenhiser, Jay Luboff of the PUC, and Patrick Eilert of PG&E. As we will do with all these panels, Sylvia -- whom you've already met -- will make a short presentation.

And I would ask the panelists, in the interests of time, to make some remarks to get us going, but to try and keep your remarks short. You don't have to make remarks if you don't want to. Try to keep your remarks to around five minutes or under.

And after the panelists have made their remarks we'll open this up for discussion. Questions? Okay, Sylvia?

MS. BENDER: I think Mike has given us a pretty good indication that there is indeed a fair amount of potential that's still left out there -- in terms of energy efficiency -- to get. Loren

has explained a very nice story about consumer response in the past, and again, the fact that there is remaining potential from consumers to do a lot more in terms of energy efficiency.

But we also have one major problem, in that many people feel that there are some big risks in terms of assuming that energy efficiency can provide any type of contribution to supply adequacy.

And the two major risks that seem to be identified most frequently are that it is neither readily predictable nor very easily quantifiable, and secondly that energy measures cannot be called upon as resources in real time.

Our section of the report talked about some of the things we think can mitigate these two problems. First of all, in terms of predicting and quantifying vigorous and defensible evaluation, a return to evaluation that looks essentially at load impacts that measures estimates of savings, that goes back to the more impact-oriented evaluations that we used to do in the past, would contribute to making efficiency both more predictable and more quantifiable.

We would know the estimates have some

accuracy. I think, as Loren has demonstrated, there is a great deal to be learned from social science research from a combination of different disciplines coming to the fore here, and informing us about consumer behavior.

Looking at how people respond to different stimuli out there, looking at how this changes over time. And to do that we also are going to need a great deal more data than we have now. We don't know enough about end-use characteristics, we don't know enough about load shapes, and how all of this plays out over time.

We don't know enough about natural gas. So there are a number of things that we will need which come under the provisions of SB 1389, to put all these things in place to improve both the prediction and quantification.

On the other side, of making energy efficiency more responsive, the things that we identified in the report on this side would be increasing the focus toward load management in the program. A lot of this is already happening right now. Conducting marketing information and coordinated marketing and information campaigns.

Again, we've seen some real success in

this avenue in 2000 and 2001. There are, again, some caveats about how this may play out, but this is another area that we think could, again, work toward making energy efficiency more responsive.

Introducing new technologies -- there are many control technologies out there. Energy efficiency has a major infrastructure in place, that's been in place for a number of years. It's an ideal vehicle to bring some of these things into the market in terms of working these two kinds of programs together. And then lastly integrating it more directly with dynamic pricing and load metering.

So our conclusions in this particular part of the paper are that policies must help protect consumers from price shocks and bill shocks as we move forward into these new pricing structures. Consumers are going to need a lot of information as they transition into any kind of new rate structure.

Efficiency infrastructure can help here. The emphasis in evaluation is going to have to move it. Continue to look at program improvement, but also go back to the savings emphasis we've had in the past.

We need to do more rigorous forecasts and resource analysis that will be coming will be requiring new data collection, different kinds of data, and social science research can help capture a lot of this remaining potential that we have out there.

So with that, I will turn it over to the panelists to open with their discussions. And to the group, to get everyone involved in the discussion at this point.

MR. SCHWARTZ: Okay. Let's just go down the row here. If you have anything you would like to say here, it's open. Okay, Jay?

MR. LUBOFF: First, let me thank the Commission for inviting us here. We appreciate the opportunity to share what we've been up to, and certainly in relationship to these particular issues on energy efficiency.

I just thought, real briefly, I'd go over where we are and what we're doing in the Commission right now in relationship to energy efficiency, and after that just a few remarks about the potential issue.

Very quickly, the Commission has been involved in the IOU side of energy efficiency

since about 1978, so we're not involved in the full state study as you folks are, you have the Muni's and some other things.

And of course we are partners with the CEC and the CPA in the Energy Action Plan, which indeed gives some preferences to energy efficiency and a focus on energy efficiency, as well as the notion that we can perhaps reduce per capita energy use in this state, which has a lot to do with the potential and this particular subject.

In terms of where we are at the Commission, the PUC, we've got two rulemakings that specifically focus on energy efficiency. One is the PGC rulemaking, or the energy efficiency rulemaking, which looks at some of the issues that we'll be addressing today about programmatic energy efficiency for the IOU's.

And that rulemaking is focused on delivering the energy efficiency programs based on AB 995 and AB 1890 prior to that, which allocates funding to individual IOU's for the energy efficiency.

The other rulemaking that we've opened is a procurement rulemaking. And the procurement rulemaking is pretty broad, and it focuses on both

supply and demand side options. And in the procurement rulemaking the Commission has made a decision that the IOU's should put into their forecasts all cost-effective energy efficiency into their forecast, which has a lot to do with this issue of potential, what it is and -- you know.

So that's another area where we look at the potential. Procurement rulemaking is focused on resource acquisition specifically and energy efficiency as a part of that.

And the utilities have put in long-term plans for a resource acquisition that include energy efficiency, that include both the energy efficiency that they get from the public goods charge funds, as well as the energy efficiency they will get form procurement, the proposed energy efficiency from procurement.

And so the issue of potential is very high on our concerns. And because of that the Commission authorized this year a study of the potential of energy efficiency for the utility service territories, and we will basically be working off of Mike's work and anything else we can.

And we're looking at getting that potential study completed, and then using that -- and perhaps doing some workshops, etc. -- as a focus for PUC concerns about what the potential is, and updating the potential, what might be out there given the fact that in all these rulemakings right now, in the PUC rulemaking we authorize about $272, $275 million dollars, which includes public goods charge for electric -- which was stated at 227, plus the gas surcharge fund, which gets us up to about 272.

As well as utilities have proposed significantly about one-third more energy efficiency funding over the next five years. That has not been authorized yet by the Commission, but it's in the proposal stage. So, in terms of this particular issue we are concerned about what the potential is, of course, what the amount is, at the staff and Commission level.

And we are concerned as well about updating those numbers and to see how much we actually have done in the past and how much we're biting off with the programs that the PUC authorizes, which are significant now. I think they're getting back to the old kind of numbers.

So I think I"ll kind of end it at that. In terms of the other issue, in terms of persistence, I guess you would call it, we've had the annual energy earnings report for the utilities, which are incentives for energy efficiency. And the Energy Action Plan, indeed, calls for incentives. And we've done a lot of work on persistence of energy efficiency over the time, based on utility claims for incentives.

So there's a lot of groundwork that's been done on this. And I think -- in terms of personally, as a staff person -- we need to keep looking at the measurement and evaluation side of this thing on an ongoing basis to ensure that we're getting what we're paying for in the long-term. It looks good in the first couple of years, but where is it five years out and seven, eight, and ten years.

And I think, as a state, if we're going to rely on energy efficiency which is in the Energy Action Plan, we're going to have to really track persistence over longer periods of time.

MR. SCHWARTZ: Thank you. I'm going to ask everyone -- if you have questions of any of the panelists to hold your questions until they've

all had a chance to make a presentation, and then you're welcome to question them, or to get into a discussion about any of these topics. Patrick?

MR. EILERT: My name is Patrick Eilert, I work for PG&E, mostly in the areas of codes and standards. I want to just make a few comments today about two areas.

One is the certainty of energy efficiency savings as they relate to the linkages between energy efficiency programs run by the IOU's and the PUC, and then the potential savings as it relates to the model we assume for achieving them.

This is in part a bit about how the industry right now is evolving, on the first topic. One of the last remnants of the market transformation era here is the codes and standards that PG&E began in 1998.

The purpose of the codes and standards program is to support enhancements to codes and standards in the state of California, for both building and appliance efficiency standards. What we do in those efforts is to develop case studies that respond to the requirements of the Warren-Alquist Act, in terms of verifying that proposals

or enhancements are cost-effective, technologies are available, and so forth.

The other major activity of the program is to attend the rulemakings and advocate for those positions and others as we see fit. There are a number of impacts of this program, and one is, of course, that we've estimated our impact on the rulemaking process in the order of hundreds of megawatts saved additional to what would have been saved had we not been at the table and conducting these efforts. They're not formally recognized, but nonetheless they are real.

It is also causing changes in markets and programs. The effect of adoption, as many of you know, is to push really hard on the building industry in general towards 100 percent of adoption of a particular measure, directly or indirectly.

And what that does is really lock in the savings that have been generated, that are possible of the resource acquisition or energy efficiency programs being conducted over the long term to make sure that technologies are available and cost-effective and so forth. It also causes program transformation.

The act, for example, of adopting LED traffic signals in the AB 970 set of rulemakings caused our programs to discontinue energy efficiency incentives for those. And those funds are now released to work on new technologies, for example.

The secondary effect, of course, of these activities is that it causes, eventually, a greater need for new technologies to come out of PIER and be handed off to the programs. Over time these activities will reduce the pool of technologies and so forth that our programs can use to have cost-effective energy savings and so forth.

The relationship between the CEC and the IOU's is a very synergistic one, given the fact that the rulemaking processes for codes and standards enhancements are public. The success of those rulemakings in part depends on whose at the table.

This program has allowed us to come to the table and advocate. And our advocacy is strengthened by our association with energy efficiency programs and so forth. So there's a pretty strong relationship that has been developed

over time, and it continues to evolve.

Now, turning over to the issue of potential. The traditional view of codes and standards is that they apply to measures fairly late in time and after quite a bit of market share.

Some of the rules of thumb that are thrown around are, well, you need basically 20 years before you can adopt a technology, or you need 60 percent market share before you can have successful adoption. That turns out not to be true, and let me give you a couple of examples.

In the AB 970 set of rulemakings we adopted LED exit signs after about ten years in the market and maybe $10 million in incentives. 85 percent market share, roughly. At the same time we adopted standards for dry-type transformers. Those have a market share of about three percent. Very little PUC funding has been spent on that, and they've been around for about ten years.

So on the one hand you can kind of say, "well, did we really have to go all the way to 85 percent?" Alternatively you can ask how many dollars would we have spent to take dry-type

transformers out to 85 percent? It could be a lot.

So, the logical extension of this is -- to use another example -- is to think about first generation T8 technology, which went into the standards in 1998 after a lot of money being spent in California on that technology.

Ten years ago, if we'd have been thinking about something like this, we might have said well, let's push towards getting that technology into standards, and indirectly, through lighting power density of course, in 1995 instead of 1998. If the number is several hundred million dollars of PUC funding, you know.

This suggests that there's a lot of leverage in looking toward codes and standards as one possible exit strategy for energy efficiency programs. This -- and this basically fits very well with this whole theory of diffusion of innovations, which has been around since the early 60's.

If we look at the building industry loosely as a large kind of loose social system, there is of course innovators and early adopters on one side of the spectrum, there's late adopters

and laggards on the other end of the spectrum. And there is a natural kind of need to take things from a voluntary regime into an involuntary regime.

Whereas an innovator requires a fraction of a permanent cost to substitute an energy efficiency technology, a laggard would require more than 100 percent of the incremental cost to take something into a standard. So there's a very good kind of fit with theory here, too.

And the good news is we know how to do this. We know how to run resource acquisition programs, or incentive programs to go after things like availability and cost-effectiveness. We know how to go after the fundamental success factors that include reliability and stakeholder support.

So we can target those types of things in a little bit more strategic way and possibly move in to kind of a new way of thinking about the kinds of energy efficiency technologies and measures that have a home in codes and standards. It won't work for everything, but it is one way that could help, I think.

MR. LUTZENHISER: I'm going to pass, I think.

MR. SCHWARTZ: Great, great. Well, Mike, we come to you at last.

MR. RUFO: Well, I just wanted to make a couple of points. i wanted to reiterate what Sylvia said about impact evaluation and measuring impacts. We spent a lot of money doing that in California in one period of the 90's, and I think we ramped that down in the late 90's.

And that was probably okay for awhile because we really did learn a lot through measurement that we could carry forward. But I think enough time has gone by, and enough changes in the market that there's a need to do some more serious measurement of savings without going crazy on that process, to address some of the issues that Sylvia raised.

I also think that, when we look at these scenarios of spending more on efficiency, we do need to be careful. We ought not, probably, just flip the switch again and spend a lot of money doing programs quickly. We did that in the energy crisis pretty well, all things considered.

I mean, it was remarkable that, because we had energy efficiency infrastructure, that we could get as much programmatic activity going over

the last two years as we did. But, ideally it would be better to kind of ramp up a little bit more gradually through some pilot programs and testing of what we really can capture effectively in that next chunk of efficiency that we have in these more aggressive scenarios, and probably what's in some of the utility procurement stuff.

I like what Pat was saying. I think we need to use what we've learned, and also get more sophisticated in how we capture the energy efficiency that's higher up in the supply curve without spending a lot of money on the stuff that's lower down where we might not need to.

And the idea of potentially using standards -- as Bruce was mentioning, he's involved in the legislation, maybe you'll comment on that -- to start looking at that with respect to existing buildings. Because when you do look at things like T8 electronic ballasts, there's a lot of potential among smaller customers and laggards, and yet I'd rather go out there and get it by paying for it rather than have it not be gotten at all.

But maybe there's a way to get it a lot cheaper by just making some requirements on

electronic ballasts, even in the onesies twosies kinds of replacement situations.

Another issue with the uncertainty in some of the potential estimates is that things have been moving rather quickly over the last couple of years. Even with respect to the procurement filings I don't think there's been adequate time to really have program managers to vet this stuff with the people in the field who have to capture savings every day.

We tried to do that through the numbers that we've generated, but when you hand them the plan that says go to 50 percent more -- we'll learn a lot at that point too, and the more input we can get from the field the better.

Another thing that I have some concerns about, and I'm not working at a broad enough level at the moment to know -- maybe there are no concerns, but -- the potential overlap between accounting for savings from demand response and load control and energy efficiency and making sure that we're not double counting benefits in any places.

And the Rand dilemma, there's a recent Rand Report that I thought was troublesome. I

call it the Rand dilemma because a couple of years ago Rand did a study for the CEC saying, you know, yes this stuff really works. And now we have our own study saying none of this stuff worked around the country.

And I'm not counting attrition, but looking at the study I didn't think it was very substantive, but it may be something from a policy/political level that we need to look at and address.

COMMISSIONER PERNELL: I have a question for the panel. First of all, let me thank you guys for being here and sitting on the hot seat, so to speak. There has been a lot of useful information, and we do appreciate that.

I have two questions. One deals with energy efficiency, and the other with conservation. First on energy efficiency in existing buildings. As you know, we do Title 24. The last round, emergency standards, we saved 200 megawatts per year. And that's based on building about 100, 125 thousand homes a year.

And I think one of the things -- we have analysis that shows, is that if you're looking for additional savings, energy savings, we have to

being to look at existing stock. And I think you hit it on the head, you mentioned it a little bit, but existing homes -- both residential and commercial -- I think we can find a lot of energy savings in that area.

There's just so much regulations you can do, and especially if you're only doing new homes you're missing the largest segment I think of the energy waste.

So my question is -- and this is primarily to PG&E and the PUC representative -- is there any programs or procurement efforts to address energy savings in existing structure?

MR. EILERT: I'm going to let Bill miller talk about this.

COMMISSIONER PERNELL: Hi, Bill.

MR. MILLER: Bill Miller, Pacific Gas and Electric. The short answer to your question is yes, that through the years probably the majority of our efforts have been in terms of what's happening in existing structures, but it's been across a pretty wide range.

So I think the place to go with this question is sort of, what and which in existing structures. That is, are we interested in more

shell improvements, is it the equipment inside the buildings, which areas do we need to focus?

COMMISSIONER PERNELL: Let's try HVAC.

MR. MILLER: Yes, we've focused on all those. And in fact the heart or our procurement proposal is residential and commercial HVAC. And as you heard in the description, the third of the big three in terms of peak commercial lighting, which you heard Mike address.

So in terms of that particular proposal we've really built it around those three, because that's more -- and I'll talk more about this if there's a chance -- in terms of this whole process that's gone on of assigning utilities a procurement function.

And having each utility look at its supply/demand balance, and extrapolate out over the next couple of decades what it needs. What struck us near term -- particularly given the allocation of the DWR contracts -- was that we needed to address those three end uses.

And really the first three to four years of our plan is built around attacking those.

COMMISSIONER PERNELL: So there is some resources going into HVAC up in the attic, leaking

ducts, and those other things?

MR. MILLER: Things that have -- basically, any measure that has a profile that looks like those end uses that Sylvia showed. So if it's ducts and that has the same use profile as the residential air conditioning system as a whole, you know, it fits. That's the kind of thing we need to go after.

The part I didn't mention in my first statement is we really designed that -- and not to debate it here but really because it would be a place where that's discussed -- but we really designed that to be on top of the existing programs, many of which address those same things, but also address a great many other activities.

And so, it looked to us -- in terms of an incremental push that we could make that really would provide the most value in terms of reducing procurement costs, which is really the whole subject of the debate in that proceeding -- that looked like the place where we could really provide the most value.

MR. LUBOFF: The Commission, in general, on the PGC side, and I think before the PGC on the DSM side, authorizes a significant amount of

program for retrofit on the residential programs. The categories of programs that the PUC authorizes are residential, non-residential which includes the commercial, and then new construction.

So the programs that the utilities are out there doing, and non-utility parties as well, at least one-third of them are focused on retrofits on the residential sector. Whether it be shells or HVAC or other technologies to reduce energy usage in the retrofit market.

COMMISSIONER PERNELL: We're in the process of conducting a study and so I would just offer that the Commission will want to work with -- obviously we're already working with the PUC and PG&E on these issues -- but with anyone else we would want to work together, because I think that, in California, this is not a one agency or one organization problem.

It's all of it our problem, and we should work together to solve it. And I think that that can certainly happen in the future.

MR. LUBOFF: Can I add one other thing?

COMMISSIONER PERNELL: Yes.

MR. LUBOFF: These areas on the residential, and some of these other areas -- as

someone has pointed out -- are hard to get now, hard to reach kind of things. And part of the thing that PUC has been authorizing, and one of the criteria for programs, is to go after those hard-to-reach savings to get them.

I think that's in general -- when you go out there, whether it's industrial or commercial, there are hard-to-reach savings to get.

COMMISSIONER PERNELL: My other question dealt with conservation. You know, we've actually proven -- we being the state, and again all of us -- have proven that, given the right information to consumers they will conserve.

The question is how much money you're going to throw at it, and whether or not you're going to have the Chicken Little syndrome.

So is there -- and this is for anybody on the panel -- do you have any ideas on how we can better communicate with the general public on conservation cost-effectively and more subtly, so that you won't get the Chicken Little syndrome?

MR. LUTZENHISER: Well, I think the people on the Commission may have thought about this, but to some degree if you have slack in the system, in terms of conservation that you can

request if you need it, then that's an asset of sorts too.

I'm just sort of thinking off the top of my head here, something I've been sort of mulling over for awhile. If you could squeeze, make everybody into the most frugal possible consumer, and sort of squeeze it out of them, and then figure out what it took to reinforce that, that would be one approach.

But I don't know how realistic that is. I don't know how much it risks wearing out that response capacity, and how much value the sort of slack response or some reasonable amount of waste in the system, which you're always going to have, might actually be a resource of sorts. I haven't really thought that one through too much.

MR. EILERT: I'll make a brief comment on this. I think that this idea that we can kind of look at the energy efficiency programs and codes and standards together really does help to satisfy a lot of broad policy goals in the state, including things like not just long-term energy savings but going after hard-to-reach customers is a very good marriage.

On one hand you might have things like

market barriers that are very difficult to go after. For example, split incentives, through voluntary efforts. But standards are a great way to do that, and there's all kinds of relationships like that in doing this.

And this may be a stretch, but I do believe that going after some of these customer groups through codes and standards is actually a subtle way to do it. It's not subtle to the builders, but it is pretty subtle to the folks who live in the buildings sometimes.

CHAIRMAN KEESE: You've come back to the point twice. So you're suggesting that incentives pick up the easy targets, and at some point we consider codes and standards.

Do you have a place in the spectrum you're thinking about? Are you saying when we get to a third we're thinking of codes and standards, are you thinking when we get to fifty percent?

Are you thinking that when we start the incentive program we should say here's our target, it's an eight-year program, and five years down the line we'd like to have codes and standards. We'll adopt them now, but we'll pick off the easy people and then five years from now we'll --

should we be adopting the standard the same time we start the incentive program?

MR. EILERT: I do think that it's not that hard to engage in long-term planning that focuses on a code or a standard fairly early in the life cycle of an energy efficiency technology or measure. And there's a little bit of planning that needs to be put in place from data collection standpoints, but the planning can be done. And of course there's risk analysis and so forth to go with that.

With respect to when you hand off from voluntary to involuntary activities, it varies. if you've got a product that's really easily substitutable for another product, and doesn't get you into a lot of kind of integrated design change in building, that can probably happen pretty quickly.

Things like lighting, that involve new systems, have to go quite a bit further into the market share. I don't have anything to back this up, but I do think that 60 percent never has to be done.

I think that by the time you reach this kind of theoretical place where, for normal

products -- energy efficiency products are not normal, most of them don't naturally diffuse -- but at some point for normal products you get to the point where they go on their own, and for most that's about 15 percent.

That's pretty aggressive, and maybe we can't do that for energy efficiency, but between 15 and 50 for most, I'd say.

COMMISSIONER PERNELL: Could I do a follow-up to this? I just want to be clear that if -- at least my understanding -- you were talking about going down a parallel path between incentives and codes and standards, and if it's a standard, which is a regulation, can you give incentives for what is required?

MR. EILERT: Commissioner, I think what we're talking about is coordinating activities, but they're not parallel. What we're saying is if we have a long-term plan that says we ought to shoot towards putting something into codes at some point in the future, and maybe we target one code cycle earlier as a general proposition than we might otherwise, what we're saying is that there are certain things that have to be done in terms of fundamental success for code enhancement or

code adoption.

And one of the big steps in getting there is making sure that the technologies are cost-effective and available and that's part of the resource acquisition or energy efficiency program effort.

COMMISSIONER PERNELL: Okay, that's fine. Because there's a lot of work to be done before it gets to the process of putting it into the standards. And you're saying --

MR. EILERT: Yes. The step, you can't skip it. We're actually I think reaping the benefits of a lot of work from previous energy efficiency programs right now, because we've had two very good, successful rulemakings. One's almost ready to end, or to be adopted in sometime early, mid-year.

But we've had some very big successes, and I think it's on the back of a lot of energy efficiency efforts over the past 15 years or so.

COMMISSIONER PERNELL: I would agree.

MR. SCHWARTZ: Commissioner Geesman, you have a question?

COMMISSIONER GEESMAN: Yes. I have been away from this subject area for a long number of

years, and I apologize for a certain threshold of ignorance, but I want to make certain that I understand.

When you speak of codes and standards, are you including both the replicate market as well as new construction?

MR. EILERT: Yes, in short. We come to the Commission and we advocate for new building standards which are connected to our new construction programs on res and non-res, and on the appliance standards, too. That impacts directly our retrofit programs.

COMMISSIONER GEESMAN: Okay. But you're not really thinking in terms of retrofit requirements on existing buildings?

MR. EILERT: Only to the extent that we're supporting case studies that get into the area of alterations for buildings in the current rulemaking. And also we're supporting the effort to do the AB 549 analysis on what the potential is for existing buildings.

COMMISSIONER GEESMAN: I recall, in the summer of 1982, coming one vote short in the State Senate, on the floor, requiring a mandatory conservation retrofit in residential buildings at

the time of transfer of ownership. Something which, at the time, the California Realtors Association was actually supporting. Is that the type of measure that you would have under review?

MR. EILERT: Not currently, but again, that's the kind of stuff that will be looked at in the AB 549 report, so -- I think that's all I can add.

COMMISSIONER GEESMAN: Thank you.

MR. CENICEROS: I'm Bruce Ceniceros with the Energy Commission. Just since this has been mentioned a couple of times already, and Commissioner Geesman is alluding to some measures that we haven't yet had the ability to really pursue here, AB 549 is a new proceeding that we will be beginning very soon here.

We have a workshop to kick it off on June 26th in this room. And it will entertain some new ways of trying to target some of that savings potential in existing buildings. The scope is all existing buildings, residential and non-residential.

And it will entertain, along with voluntary approaches, it will look at for the first time some new regulations for existing

buildings such as the one that Commissioner Geesman referred to there, requiring that certain things be done when a building is sold, or possibly other points, trigger events in the life of a building -- hen it's refinanced, when a roof is replaced, things like that.

So, for people who are interested in participating, we welcome you to come on the 26th, and we'll have information on our website starting next week, on this project. So keep your ears open about that.

MR. RUFO: I just want to make a couple of quick followup points. I wanted to support what Pat was saying about the 15 to 50 percent as a reasonable range. Technology has demonstrated that its effective and accepted in the marketplace at that point.

And then, back to Commissioner Pernell, I think you raised a really important --

CHAIRMAN KEESE: I'm sorry -- you concur with that?

MR. RUFO: I concur with that, yes. I think, Commissioner Pernell, you made an excellent point about the messaging and how do we handle that moving into the future.

And I haven't seen any studies of this, but I think we might want to move to messages -- I think "flex your power" was very effective, just the very term of it -- and I don't watch a lot of TV so I never actually saw any of those ads, but the term itself was very appropriate for the situation we were in, because people were feeling powerless with the energy crisis.

But we can't -- that does have a certain Chicken Little kind of dimension to it. There's some really good, I think, East Bay MUD advertisements over the last couple of years. And -- I forget what they were doing before -- but they shifted the last couple of years to a "water, save it for what you love" campaign.

And it really has a very positive focus on the environment and, you know, it's a conversation message but it's very tied to kind of the strong, environmental values of people in the Bay Area. And it's not a "the sky is falling", it's a very positive kind of thing.

So I don't know if, Loren, you've heard of anybody studying that kind of campaign or something similar to it?

MR. LUTZENHISER: No, I haven't, but

that's an excellent point. That's sort of how you create these long-term reinforcement things, is to tie into things that people are really concerned about, and make your product relevant in that sense.

I had another quick comment too about the diffusion model, because basically -- and I concur with everything that's been said about it -- that's what you're doing in a diffusion process. These early adopters are the people who are playing with the technology and have surplus wealth and the ability to do it.

The opinion leaders are the second group, and they're really people who are willing to take risks -- and this is across any new technology that's introduced into new markets -- they take risks, they make the mistakes, they can absorb the costs, and they demonstrate to people who don't believe that they are in a position to take risks that it's worth doing.

Then the next group will adopt it. You see this across a broad spectrum. My sense is that the strategy that goes first with incentives and so on is basically one that recognizes that it's a risky proposition, and says that, as a

matter of public policy it's worthwhile for the public to share risk early enough to demonstrate the real benefits, but the benefits to the users and the benefits to the public of the technology.

CHAIRMAN KEESE: Early on we saw a suggestion of what we get from subsidizing one-third of an energy efficiency measure, and that if we doubled the money we could, we would be subsidizing two-thirds.

It would seem to me that before we get to two-thirds -- if we have an effective product or technique or whatever -- before we get to two-thirds, we should be at that point where we're thinking of codes and standards.

MR. LUTZENHISER: Right. You either get market uptake on its own and/or you get sufficient agreement that this is a worthwhile enough thing that it ought to be part of the codes and standards process, sure.

MR. RUFO: I want to make a comment on that, because that comes from the study that Fred Coito and I were doing. Just to say that we were not necessarily advocating that that was the best approach. It somewhat was a limitation of the modeling methods and the scope, that that was sort

of the easiest way to ratchet up.

But one of our recommendations is that there needs to be a lot more work into a more sophisticated way to get that next level of potential, rather than just -- it was just kind of a mechanistic convenience, and I always caveat it in that respect.

CHAIRMAN KEESE: I understand, but I guess my tendency was to think -- would be that if we had six strategies that we're funding to one-third, I would rather see us add another six and go to twelve strategies we're funding at one-third, rather than fund two-thirds of the original six, in very loose terms.

MR. RUFO: Yes. The only thing I would add after that is that I think it is a dilemma in that I've seen a lot of cases where if you don't fund enough you fundamentally have high proportions of free riders.

And there's a lot of potential that when you get more aggressive in how much you're willing to pay you can start capturing a lot of stuff that really wouldn't have happened otherwise. But, on the other hand, it begs the question of can you do it cheaper through a codes and standards kind of

approach rather than the cost of getting to the lagging parts of the market.

COMMISSIONER PERNELL: Just one comment on the codes and standards. Our regulation says that it has to be cost-effective, so as the market transformation takes place, those technologies have to be cost-effective in order for us to adopt them.

MR. MILLER: Bill Miller, Pacific Gas & Electric. I wanted to say a couple of things related to other things that the panel talked about, in particular the potential studies and the measurement. Jay mentioned this as well.

But having spent six months putting a long-term procurement plan together, it really opened my eyes in terms of the new dimensions that adds to this whole discussion.

Because at the end of the day, somebody's going to be in the room, and they're going to have to make a purchase in the day-ahead market depending on whether there was more or less energy efficiency, or more or less demand response, or whatever.

So, it's going to come up in terms of a dollars and cents decisions that -- I think the

term may be load-serving entities -- are going to be making. Utilities, Munis, all of the community aggregators, you know, should they choose to play in the business.

So the certainty with which we can plan and know that efficiency is going to happen takes on an increased importance because of that. So I wanted to basically reinforce the points that the panel made on that earlier, because it's going to turn into real decisions that people make, and then there'll be the back tasking in terms of whether the right decision was made, and who should pay, and etc.

So the greater certainty we have going in, then the more we can minimize all that aspect coming out. And that the additional -- I forgot if it was Mike or somebody else -- referred to the issue around hedges.

There's a view, and we -- PG&E -- sponsored some work showing at the ACEEE meeting next week, that in a sense efficiency is a natural hedge. So, while cost-effectiveness is important, either from various perspectives, in a procurement situation it starts to take on a new dimension in terms of its insurance value against adverse price

movements.

And I think that's something new that we need to learn a lot about before we can be comfortable about using it. But I basically wanted to support that aspect of what was in the panel. Because in the world that's opening up in front of us, standards will be important, but also will be the certainly with which we can plan around this particular kind of resource.

MR. SCHWARTZ: Bill, I have a question. Do you have any -- given that we're looking for recommendations on exactly how to handle efficiency in the kind of situation you're talking about, where dispatchers are making day-to-day decisions on how to serve load.

And if efficiency is in fact on some policy document, such as the Energy Action Plan, and given priority in the loading order, do you have any recommendation on how much efficiency we should be able to count on, given that we have made some projections of potential? How to handle that potential in this particular situation of resource allocation?

MR. MILLER: I think there's some confusion around the word resources. And I think

that it gets used in different contexts. And I think if we had superscripts then we could have a clearer kind of conversation.

I was once in a room where our power control folks wanted a meter on the wall for their energy efficiency, this is back in 1990.

MR. SCHWARTZ: Did you give them one?

MR. MILLER: You know, I think actually the kind of way you can think about efficiency is it's like a particular kind of long-term contract. It's a front-loaded long-term contract. You pay money this year, you do some -- we're talking about efficiency in terms of insulations of hardware or smart systems that will react over time.

And in fact you get less load manifest over some period of time, depending on the action that you've taken. So that when the dispatcher looks at, or the day-ahead planner looks at what the needs are, it's already built into their load forecast.

There are other things that people talk about efficiency, and there's relationships between efficiency and demand response that I think we really need to talk through and get

clear.

For example, a lot of the smarter systems going into buildings caused that building to operate more efficiently all the time, for the life of that system. On the other hand that smart system also provides the capability for the kind of response that you referred.

If there's a signal, and -- I've forgotten, the three C's, was that the condition -- you know, if the three C's line up, the building operator says yes, and in fact you get an additional impact of a load reduction in response to some particular near-term system conditions.

So there's cross-terms in terms of the technology. So I think what we need to do is sort of work through better understandings about what these words are. I mean, I don't think of efficiency as is practiced through rebate programs and to some extent behavior programs but not all, as serving that kind of need.

They aren't part of a load order, in fact what they're doing is they're impacting the demand forecast that has to be met by supply loads and other kinds of activities. But I don't know if there's agreement about that particular view.

But I think we need to think through, in terms of the nuts and bolts on the grounds in the building, you know, how these things work, and then we'll see what their natural roles are. And there will be some crossovers and some confusion, as I mentioned with that -- for example, particular kinds of technology.

MR. SCHWARTZ: Karen?

MS. GRIFFIN: I'm Karen Griffin, I'm the Manager of the Integrated Energy Project here at the Commission. And I'd like to get a sense from you all about how risky or how reliable are the program saving estimates that we have right now.

The policy question which is facing this state is in terms of an investment loading order for our electricity and natural gas infrastructure. How much should we invest in DSM and renewables and DG generation and transmission.

And we're trying to do DSM first. So you don't get to do any more studies, you've got to draw on what you know now, and help us say are the savings per dollar that we're using now -- in terms of past history -- is that 100 percent good numbers?

Is it really too low because the

potential is so much higher? Is really potential less cost-effective because it's a harder-to-reach community now? We don't know if you should discount it by 10 percent, you should discount it by 20 percent, 30 percent.

We'd really like some sense of your comfort about the reliability of the program savings estimates that are in play.

MR. SCHWARTZ: Alice?

(laughter)

MR. LUBOFF: I'll take a shot at it. I think first, it relates to -- one of the issues relates to the potential that's out there in the particular sectors. And to the extent we have information over the years about reductions in those particular sectors since DSM programs have started in particular and the efficiency programs have started, we can probably make some fairly reliable assessments about what the goals were and the targets were and what they ended up.

That being said, it may very well be that we all should say "take 10 percent off." There have been persistent studies, and a lot of them, and I think Mike probably has a better handle on what's been done in that area. And

those studies tracked with dollars that were paid to IOU's at least, not to municipals, and that is over a ten year period or so.

And to the extent that those studies say this is where we've gone out and done this, ORA has taken the lead and gone out and done some work on it. There are some controversies with those studies, the persistent studies, whether they're actually -- different people will say different things at different times.

I think the point I was making about the issue of persistence is that it may be that we have to track it a lot more than we've been doing. Not just once in one rulemaking, but we may have to say we're trying to get somewhere along this road, and every three years we better look around and see if we're getting there, if the claims are happening.

So for instance, in terms of Bill's language I guess, you would say if you bought a capacity contract, and it was a long-term capacity contract like the old days, you'd check in and see if you're getting what you expect to get -- three years, five years, you know, every day you would know whether you were getting it.

There ought to be some way we can look at this, and find out what we're getting on a tracking basis. I don't know if I answered your questions exactly, but there is an issue with it.

If you have a building that's energy efficient, that's part of your process, and maybe it's a big commercial building, or maybe you have ten of them. And then you go back four years later and the business has shut down, or they've expanded, or whatever the situation is.

I think it's a good question, i think we have a lot of data that say we could start where we are right now, but i do think we should develop some kind of way of looking on the EMB side.

MR. SCHWARTZ: Other panelists that would like to comment on this? We have people in the audience who would like to -- oh, I'm sorry, Mike.

MR. RUFO: i think I have to. And Fred, I'd like to get Fred's comments here too. Fred and I worked closely developing the numbers in the various potential studies, and I think we have a very similar perspective, but even between the two of us we probably don't completely agree on where we are with respect to your very good question.

I felt that, over the last couple of years when we'd run these numbers and developed them -- and I won't bore you with all the gory detail, but as you can imagine there are some data inputs to these studies that are very solid, and there are plenty of data points where one is guesstimating pretty crudely.

What we tried to do was to balance, as much as possible, our assumptions, to avoid systematic bias. So we didn't' attack it as advocates, we didn't attack it as doubters, we tried to be as truth-seeking as possible, but recognizing that there were plenty of places where we just didn't have empirical data.

So at a minimum we tried to balance those assumptions. So we might make a string of five conservative assumptions on one side, and maybe not be as conservative on another five, so that things balanced out, they weren't systematically biased in one place or another.

We also tried to apply the litmus that we felt our clients would want applied, which is if you gave me the money tomorrow to go get that, could I swallow and say, yes, I'll go get it. And I think, I think the results we have are pretty

solid and reliable from that point of view.

Now, that said, the concerns that I would have are that I think the uncertainty increases the more that potential between the business as usual case and the max achievable that you go after.

You know, when you get into things like CFL's, how many CFL's can you get into one person's home? It starts to tie in to the evolution of the technology itself, which is changing quickly. If the technology continues to perform really well, then I think it becomes easier.

I want to hear from, maybe Bill on this, as to what's coming out of the procurement side, where they've had to kind of take the numbers now and look at it internally and have the program managers look at it and really take that next step of okay, if you had the money tomorrow could you deliver it.

I do have concerns about the fact that we weren't able to incorporate the hardware from the energy crisis, and we seem to still have some disagreement about how much hardware has gone on.

Maybe it's not that much of a

disagreement, maybe it's a timing thing. That maybe not a lot of it went in early in the energy crisis, but over the last two years a bunch of it may have gone in.

So, I don't know, if it was me I'd maybe discount things another ten percent or something just to be conservative.

MS. GRIFFIN: Is yours a measure study or a program study. Are you talking about measured potential or program potential?

MR. RUFO: Our study is both. It's more of a measure study. It builds up from the bottom, takes every square foot in the population and implies estimates of how many slots are already converted to the efficient measure and how many slots are left, and then we build up crude, very crude portfolio level programs.

And that's what I was mentioning before, that mechanically it was very unsophisticated in terms of why we have the scenarios with the increasing incentives. It's in the modeling that we do, it's you know, spend more money, make more people aware, make them more knowledgeable, increase the participant benefit/cost by paying them more money, and you get more adoption.

I think that all works, you can do it, we're doing it in programs now. But there are policy implications about approaching it in just that way, so that's another type of uncertainty there.

Also, on the IOU studies we had another funding level, the 50 percent increase, which I think was in there because it was a stepping stone that we thought was maybe more appropriate before one would go all the way up to the aggressive case. And where did the procurement stuff end up, Bill, in the 50 percent range, do you remember? I mean, just for PG&E.

MR. MILLER: Uh-hmm.

MR. SCHWARTZ: Can I just ask you a clarifying question. When you say discount the numbers 10 percent, are you saying that, for example, the number that the staff used in the high DSM scenario should be probably ten percent less than it is, based on what you're saying, or --?

MR. RUFO: Maybe the cost-effectiveness. I mean, I think you can get all that. But the other thing is we used average cost per customer to drive this thing, and to the extent that the

lighting potential is more in the small commercial segment rather than the medium commercial segment, then it's going to cost more maybe than what we benchmarked to.

Because we benchmarked to the last five years of the program. So it's more on the, the adjustment that I would make is more on the cost. I think the potential is still pretty much there but the cost of getting it could be a lot -- on the other hand, I can counter that conservatism with the fact that we made very conservative assumptions on a lot of things.

For example, we fed into our program potential models the kind of worst-case scenario that every measure in the supply curve was assumed to have had its preceding measure already adopted.

So we only fed in -- for example, for an occupancy sensor we only fed into our forecast the savings for an occupancy sensor assuming that all of the market had already done an efficient lamp in front of it. So there are those kinds of conversatisms that are already built into the study.

So, I can also settle with that, too. I'm comfortable with the numbers as they are. I

hear people criticizing them. I know, and I'm working on another study right now in Connecticut, and some of the reviewers there have raised the issue of well, these numbers look a little bit lower, like the southwest sweet study, and this study and that study.

And a lot of the traditional advocates might look at the numbers that we have in the study and say that they are too low, but I think they're actually pretty good. So I guess I would stick with them for now.

MR. SCHWARTZ: Fred, you wanted to --?

MR. COITO: Fred Coito, Kema-Xenergy. I guess one aspect I think of uncertainty that is, you know -- Mike kind of hinted at just now that I think is important is, you know -- I think we feel pretty comfortable with our business as usual out about five years. You got further and you had problems with how much potential is really left, and how many T8's are really left to convert.

But I think the other element of uncertainty that needs to be explored more is the customer adoption process. I think quantifying how much you get by going from a 30 percent rebate up to a 60 percent rebate. Or should you be

doubling your marketing dollars to inform more of the population versus increasing a rebate at all?

Those whole aspects, and what's an optimal program design, you know. Ten percent of your budget marketing, 70 percent rebate, and 20 percent administration. Or 50 percent marketing, 30 percent rebate.

All those types of things have not been explored very fully. And I think a lot of research -- I would feel much more comfortable with the measured persistence numbers, for example, than I do with the customer adoption process.

When I go out to the market and I say okay, we're going to increase our rebates from 30 percent to 60 percent, how comfortable am I that we're going to get the projection of increased impact? I don't know. And I think this is one of the areas, in our study at least, that it's more what we think of the social science of it.

But there just isn't that much out there. There's a lot of diagramming the process, and understanding the process, but now what are the values behind that process. How much impact per dollar do you really get when you start

getting out of your business as usual?

So I think that's one area that I just want to emphasize as being, you know, really ripe for a lot more research. And I think Mike would probably concur.

MR. RUFO: Standing on that last thing that we last researched. She wants the answer today.

MR. COITO: Well, yes, but today we've got five years of business as usual, and we probably feel pretty comfortable.

MR. SCHWARTZ: Well, I think what Karen's getting at is we have to come up with this report and put it out very quickly. so we have to determine to what extent we make these recommendations, and what we say in this particular cycle. This report does have other year cycles.

MR. COITO: And let me emphasize one other thing, I think Mike would agree with me. One of the things we didn't do in our studies, that probably is a common sense thing, is the diminishing returns on two year marketing dollar, and probably two year rebate dollar.

As you get into the harder to reach

markets they're going to cost you more. Because they're harder to reach. We tended to be very simplistic and just more or less take an extrapolation from our business as usual forecast out.

In reality, there's going to be diminishing returns at some point. You're going after customers that speak different languages than the mainstream. And so, getting into those niches is probably where, I would think, the cost per impact is going to change, like Mike says.

And I think it would -- from that, at least that dimension, it's going to go up. And so, we tend to see some of the TRC ratios that we show for our maximum achievable might be on the high side.

MR. RUFO: Yes, but at the same time, we've also held static our assumptions about product costs. And we know -- look at the electronic ballast, product cost came crashing down because of our program activities. So, we've been conservative.

MR. COITO: Yes. It's just a question of how much you get though when you start -- you know, like next year you're going to double your

program budgets, are you going to double your impacts? I think those are the questions that still need to be addressed more fully before we feel comfortable.

And having been one who's done some persistence studies, you know, we have 15-year studies, and we're studying the persistence at year 6, you don't learn much. You spend a lot of money and you don't learn much. I think you could probably learn more focusing on other areas.

MR. SCHWARTZ: We have another gentlemen here who's just dying to get into this discussion. Do you want to get in here, and --? Wait, Karen, I didn't want you to leave yet.

You have --? Was this on this same point that you wanted to --?

MR. UHLER: It actually goes back, I've been standing back there since Commissioner Pernell's original question that started the whole thing, hoping to make a quick comment on that.

My name is Kirk Uhler, and I'm with the Electric & Gas Industries Association. Commissioner Pernell raised the issue of residential HVAC retrofit programs as one of the greatest opportunities to capture benefit. And to

the gentleman from the CPUC and their programs in place, EGIA is one of the third-party implementers for current programs in the marketplace.

We were awarded PGC funds for buying down interest rates on high efficiency HVAC, a residential retrofit program. My comment is to the point of how, in the future, I hope we can work to maximize the efficiency of third-party providers such as EGIA without minimizing or dismissing the inherent benefit of having the investor-owned utilities more involved in these programs than they were this last time around.

What you have right now is 70-some odd programs in the marketplace. That's 70-some odd program administrators individually. That's 70-some odd EM&V programs going on. I think that we took a tremendous step forward in including innovative programs in the marketplace when you opened it up to third parties.

Programs like ours, like others. That the IOU's would not have probably engaged on their own, that reached new market segments. However, we went too far, I firmly believe, and I think a lot of other third-party administrators would agree.

You actually created some animosity between the third parties, the IOU providers, and the CPUC. And you really dismissed an awful lot of expertise inherent within the IOU's, and what they have done over the many years in bringing these programs forward.

And so, my purpose in stepping forward was simply to -- to the gentleman I believe from the CPUC -- to emphasize that yes, there are an awful lot of things that we in the marketplace can do very well. There are things the IOU's can do very well.

I would encourage you to look at opportunities to incent the IOU'S to reach out to the providers themselves, third party providers themselves. Rely on the management expertise, the administrative expertise of the IOU's to work with those actual individual providers in the marketplace to get those programs out there.

MR. SCHWARTZ: Thank you. I want to go back to Karen's question for a minute. It's a critical question, it's a critical question for the report, it's a critical question for this particular segment of our discussion.

And I would like to hear other people's

reactions to that, recommendations on what we should do about that, if any of you have some. Mike?

MR. MESSENGER: Well, I heard Karen asking essentially two questions. And I think it needs to be put in the context of what the Commission's overall policy goals are.

The first question I heard her ask is, from the perspective of the past, when you go back and actually measure the savings that you got, how close is that to what you expected? When you funded a program and you said you were going to get 10 megawatts, did you get nine megawatts, eight, seven, 12, etc.

And then the second question she asked was, on a going forward basis, to what extent can we rely on these estimates of potential and the dollar estimates of potential to deliver resources reliably? How about trying to answer both questions, and then --?

MR. SCHWARTZ: Why don't you just answer the second one. Okay, answer them both then.

MR. MESSENGER: The first question. The Commission actually looked at that pretty systematically back in 1994, and then we did it

again in 1996. We went back and looked at, you know, ex anti estimates of what was going to happen, ex post estimates of what happened. And I could give the actual results.

But my memory of that is that basically, most of the studies were within plus or minus 20 percent of actual, on both sides of that -- 20 percent more, 20 percent less. And I think the mean was .95 or .96. So they were pretty good in terms of estimating energy savings.

But here's the important point. There was more uncertainty on peak. On peak the estimates were plus or minus 30 percent as I recall. Part of that is there were differences about how to estimate peak, and whether there was good, reliable metering data, and what load shapes you used, and that type of thing. But I think there was more uncertainty on peak. So, that's the answer to the first question.

The second question, potential. From my perspective the potential studies are a little bit more uncertain with respect to cost-effectiveness, but they're almost exactly identical with respect to energy and peak savings.

Because they're using the same database,

and they're looking at the same types of technologies and the same types of end uses. What you don't know -- and I think what Fred was talking about -- how are program designs going to evolve, and to what extent are you going to have to use more marketing dollars to reach different segments.

And I would suggest, if i had to do it, if it was my paycheck, I would be discounting that cost-effectiveness estimate by 20 percent, because I think that there's significant possibility at least that you're going to have to spend a lot more money to reach, you know, the 50 percent of the customers who haven't responded to the programs, and who are not aware of the programs right now, as we heard from the original research, than if you're going to use the existing set.

Now, if you discount the estimates by 20 percent and you still have a TRC ratio that goes from 2.5 down to 2.1, then you're probably okay. But I would suggest that that's still -- we're not asking the right questions.

The last thing I want to say is, when you look at what happened in 2000, 2001, and 2002, from the perspective of just the demand side of

the market, two things were clear.

One, demand response happened 12 months too late. So while we can all congratulate ourselves and say we had a great set of programs and we achieved 7,000 megawatts of reduction, or 6,000 by 2001, the problem was that we needed that in the summer of 2000. We didn't need it in the summer of 2001.

And the real indicator that you need to focus on from my perspective is what can you get in real time from either price response or demand response or load control, or interruptible rates. And those were the programs where we predicted 4,000 megawatts and we got 2,000 megawatts, or 1,500 megawatts, depending on how you look at it on any given day.

So, if you're looking at uncertainly in terms of what you want to do in terms of meeting resources over a five or ten year period, I would argue that the near and present danger, the most important set of commitments that you make is what are you going to get in the sort of demand response, and by that I mean within -- if you want to send a message, what fraction of the demand is going to react within hours or days to the signal,

as opposed to these conservation programs which want you to react within weeks or months to a message.

And so the important thing to focus on is how can we reduce the uncertainty that we have with the current set of programs. We have an existing set of interruptible or curtailable programs as well as load management and cycling programs and a variety of other energy efficiency programs.

Those are the programs that are going to either make or break the system if there's another emergency. Those are the ones that will either provide the cushion or they won't.

And so, to summarize, I think it's a very wise thing to do to set goals and targets and commit to energy efficiency for the long term, but not as a method of trying to keep the lights on or meet reserve margins.

I think they're primarily more valuable in terms of a hedge against future price increases, and as a hedge against environmental threats that we have uncertainly about in terms of what the overall impacts are going to be, both from the perspective of air pollution or global

warming.

So the bottom line is I think it's an important question to figure out what to recommend in terms of energy efficiency, in terms of funding and dollars, but it's more important to look at demand response, and the Commission, I think, probably has a policy of five percent reserve margin, that we think we should have a buffer of five percent on the demand side.

And what I'd be focusing on if I was worried about 2007 and 2008 is should it be five percent or should it be ten percent, or should it be seven percent? And how do we go about making sure that when we need it again it actually happens as opposed to we push the switch and nothing happens. So, that's my answer.

MR. COITO: Fred Coito again. I just want to -- this goes back, I think, Mike, to understanding just how much customers will respond to a financial either carrot or stick. I think understanding of the technology is probably further along than understanding customer response.

We've done some forecasting on demand response, and it tends to be a Delphi approach.

You know, you get experts in the room, and there's not a lot of hard data to back your forecast. So it goes back to, once again, to the whole customer response.

And I think one of the issues on energy efficiency that Mike raised, about discounting your, you know, how much it costs to get a certain savings in the energy efficiency over time, I thing the response to that though is how much more efficient can we get our programs. If we focus on programs for a less than sporadic approach.

In the last ten years in California that I've been here, programs are never the same more than two years in a row. Why are the awareness of programs so low? Because we don't have a program name. Flex your power is out there for two years, two years ago before that it was something else.

The utilities all have different names for their programs and they all -- you know, there's not a lot of identification going on. So I think one of the issues that we face is getting away from the one year budgeting cycle or two year budgeting cycle that turns into a one year cycle, so that firms or administrators can establish some efficient process to actually deliver energy

efficiency.

So that might actually cause your costs to go down relative to your Kwh and KW saved. But it's another element that, talking about efficiency, I think it's another element that might counteract Mike's 20 percent discounting in the long haul.

MR. LUTZENHISER: I've got a couple of quick comments that play off of both of these, because they do have to do with people and customer response and what we don't know. We don't know an enormous amount about this, obviously, because we haven't looked at it.

So can we get another study or two or five or whatever. But I think the nice convergence here though is that the thing that apparently has the biggest potential for efficiency gain, residential cooling -- or a big one as well is commercial -- is also one that has significant system load effects, it has significant long-term energy effects, environmental effects.

It's also the one that people, strangely, seem to understand, seem to disproportionately willing to act upon, and where

they see potentials for retrofit and so on. So if there is some way -- I mean, the thing I was wondering about, I was going to ask PG&E and CPUC folks is that even though we've had residential retrofit programs for a long, long time, and we're rolling out more and so on, what proportion of the market, if we had immediate uptake in the available resources, what proportion of the market do you get with the level of commitment that we've got?

Because it strikes me that there is potentially a very significant opportunity here, and I'm not sure it's being supported on a scale that would be appropriate to actually realize it. I think there's an enormous well of good will at this moment in the public.

MR. LUBOFF: I'll respond a little bit on that one. In our programs that the utilities -- the IOU's at least -- are sold out, some of them, by the end of the year. Some IOU"s have incentive levels, if you will, at say around the 30 percent level. The potential studies that we see say you can go to 100 percent and still be better than avoided cost.

So, there's a lot of play between 30

percent of what's out there. You also have -- I'm relatively new to California, but I've been around this stuff a little bit -- you also have the shift between DSM prior to restructuring, which was a resource acquisition, focused and could have been ratcheted up or down depending on the way Bill's going to do it in his plan, you know.

But then you had a shift during the restructuring period which seemed to be that price would take care of it, the market would take care of it, so you didn't concern yourself with this stuff. Now we're back to a post-restructuring kind of mode.

And yes, if you go by the potential study there's a lot out there, and yet nobody has done the work as far as I know to say whether we should go at 30 percent or 60 percent, but that has to do with policy, and the next panel, I think.

MR. SCHWARTZ: Well, I'm getting a lot of people playing to their watch and/or their stomach, so we've got one minute. Last comment on this before we break for lunch.

MR. MILLER: Bill Miller, Pacific Gas & Electric. Karen, the way I answered the question

was in the context that I didn't need to go -- or PG&E didn't need to go -- to the high level of realizing the potential in the near term. So that I had the luxury of saying well, what does best fit look like for the next two-three years. And in terms of what the particular needs are.

Now, it's my understanding -- and I'm not an expert on this half of the business -- but across the Western States Coordinating Council, when they look at need they don't see huge need, although there could be specific circumstances, for some period of time.

So it may be that my answer, which was to start small and appropriate and learn for the next two years -- because we were rebuilding this planning function in a matter of months, and ER's used to be on a biannual cycle, and I think the IEPR is a biannual cycle, and I don't know what cycle the CPUC's long or short term planning processes will be, it sounds as if it's currently annual, but things may change, to really answer your question.

So, my practical answer was, because of the needs PG&E faced, the residual net short, it didn't need to go to high levels of potential. So

the uncertainties around that were less important. It had specific needs that could be addressed in certain areas, and that's what was appropriate under the circumstances.

I think that the kinds of numbers that I'm proposing in the plan represent a trend. Four years out, I think we probably are at a point where we're doubling the budget that goes to resource acquisition currently, something like that. And it does propose going further. And I do expect that to be there. And I also look forward to the opportunity of the next cycle.

But I think the first -- I think for 2004 we're proposing 25 million, and if our resource acquisition -- because it's not divided up that way, and it's kind of hard to know if that's 60 million or 70 million, out of the 106 million electric that we have. So that represents a significant but not large increase.

MR. SCHWARTZ: Okay. We're going to break for lunch. In the interests of trying to maintain some semblance of our original schedule, I'm going to have to ask you to take a shorter lunch than you would probably like to take, and try to be back here, if possible, in about 40

minutes. And that would make it about 1:35.

Is there anyone that has prepared remarks that they would like to make after lunch? One hand, two, anyone else? Well, all right, you have just bought yourself a little longer time for lunch. So let's come back at a quarter to two.

(Off the record.)

MR. SCHWARTZ: Welcome back. We are going to continue this workshop on energy efficiency. And they've turned up my microphone, so if I'm too loud let me know. We want to give those people who would like a chance to make prepared remarks an opportunity to do so now.

I know we have two people that raised their hand, Eric Worrell, would you come on up now?

MR. WORRELL: Thank you. I'm Eric Worrell. I'm an independent engineering consultant, in business as EEW Company, or the Ergonomic Energy Works. And I regret that Commissioner Pernell is not here, because I think what I have to say goes to many of his concerns.

I spent 20 years in the energy industry, in natural gas production, storage and transportation, petroleum refining, and

independent power development. I've also paid a lot of attention over the years to renewable energy, and public policy and human behavior, where I also have a lot of interest.

And I'm going to address an item that seems very much to be conspicuous here by its absence in these proceedings, and also in the proceedings related to getting rid of our dependence on petroleum.

There's a basic management principle that I think all of us are pretty much aware of, and that's the idea that you reward behavior you want performed, and you penalize behavior you don't want performed. We all, I think, mostly prescribe to a basic moral principle, and that is we receive rewards for what we contribute to society, and we pay fair value for what we get from society.

Our public policy, and especially our energy and resources policy, seems to do much the opposite. When we work hard, whether we're working at minimum wage or working in a high power position, we pay a lot of our income in taxes. Sales taxes, payroll taxes, income taxes.

This discourages people from hiring

those who provide services, because the cost of services have to be inflated to pay for the taxes, as well as to pay for the basic labor that's provided. But when we consume energy, or other natural resources, we don't pay the full cost of what we inflict on other people for what we consume.

This is particularly true when we consume natural resources as a method of earning our living, or earning money from our capitol, when we own a refinery or power plant or something else.

I think more effective than most of the energy efficiency rebates and incentives others discussed today would be a change in our tax policy. Which wouldn't be that complicated compared to what we already have in terms of tax policy, which is a royal mess as we all know. We discard the taxes that discourage the use of labor and brain power. We'd replace it with taxes that account for the full consequences of resource consumption.

And really this should be done at the national level, but there is a lot of room for California to implement this by itself, and make

our tax system and our consumption of resources a lot fairer and more effective. Most sales tax applies to the contribution of human labor and ingenuity. A very small percentage goes on the non-renewable resources part of what we consume.

I think we could agree that human labor is one of the most renewable of all resources. We could replace the state sales tax on very quick order with taxes on crude oil, refined products, natural gas and electricity, and other resources.

With more time, we could replace state income taxes with appropriate resource-based taxes. To encourage employment, further credit could be given to payroll taxes, which are paid to the federal government and worker's compensation insurance premiums, which are mandated by state law.

What results would we see if we changed these incentives? Energy efficient building materials would become five percent cheaper, laborers and craftsmen would be hired to implement easily achievable energy efficiency measures, and build more sophisticated energy facilities, which would make much better use of resources.

It would be more cost-effective to hire

engineers to improve refinery processes than to continue business as usual. Having worked in refineries, I've seen plenty of places where steam leaks or other refinery processes could have been improved if the cost of crude oil went up, and the cost of labor went down.

The cost-effectiveness of government would also improve a great deal. Government salaries would no longer need to reflect sales income and payroll taxes. Government would also benefit from reduced costs of goods and services, because government, of probably all of our economic activity, is dependent on human labor, much more so than on our resource consumption.

When you propose things like this everybody says that the low income consumers will be hurt the most, but they'd benefit because their energy cost increases would be offset by elimination of sales taxes, which they pay the most as a percentage of income. Payroll tax credits and similar types of incentives could also help.

Energy prices would become much more predictable. Having a specific margin in the energy prices as a known quantity, rather than a

variable, would greatly improve the ability of industry to predict what their cost would be down the line.

And so I guess the question why is our governor proposing a new sales tax, when he has an opportunity rarely available to put taxes on energy as the costs are going down, when people would not see that cost in how they do their every day thing, compared to what they saw for the week or the month or two months before.

We have a very brief window here where we could take advantage of this, at a time when the state would greatly benefit by the incentives to hire people to improve energy efficiency, and by reducing the consumption of energy, and getting the base cost of energy down, and stabilizing that base cost, making it less volatile because demand was lower.

What can the CEC do besides developing the policy and presenting it to the governor? Educate consumers on how they can avoid paying those extra taxes by changing their own behavior, buying different cars, improving their home energy efficiency, changing the ways that they get to work. Train homeowners and installers to do a

good job installing energy efficiency improvements.

And probably most important of all, be the organization that evaluates the goods and services that are provided, because education about what is effective is probably the most important. Thank you.

MR. SCHWARTZ: Are there any questions for Mr. Worrell?

CHAIRMAN BOYD: I have a comment. I would like to invite him to a hearing that's taking place this Friday. Mr. Geesman and I will be joined by Chairman Lloyd of the Air Resources Board at a public hearing on reducing dependence on petroleum.

I think he would find an interesting audience there to listen to this issue, because the newly formed coalition to fight hidden taxes in gasoline will be much opposed to most of what we're going to be hearing, and they might benefit from your message. Anyway, if you'd like to know more about that, check our website, or --.

MR. WORRELL: I planned to be there.

CHAIRMAN BOYD: Thank you.

MR. SCHWARTZ: Is there anyone else who

would like to make a presentation? Yes.

MS. HORWATT: I'm Andrea Horwatt from Southern California Edison and I would like to read a prepared statement. I think it will probably take less than five minutes. It's about the staff workshop paper.

MR. SCHWARTZ: Please go ahead.

MS. HORWATT: Okay. "The staff workshop paper provides many useful pieces of information and discussion points, and Edison plans to file written comments on the paper. Parts of conclusion six for the discussion workshop topics, however, are premature and significantly flawed."

"As the workshop paper notes, the topic of the most effective administrative structure for energy efficiency programs is already being dealt with in two CPUC proceedings -- the energy efficiency proceeding, and the procurement resource plan proceeding. SCE has filed this proposal for the most effective administrative structure in the procurement and resource planning proceeding."

"In summary, the utilities are the most effective administrators for California. A recently published study by the American Council

for an Energy Efficient Economy provides additional evidence for this conclusion."

"It is widely agreed that administrative certainty for the full benefits of energy efficiency needs to be realized, as the conclusion states. It is also widely agreed, and there is strong evidence, that the multi-year horizons for energy efficiency funding, planning, and implementation are also needed for the full benefits to be realized."

"The conclusion should add this essential point that was made in the earlier text of the paper. And conclusion number six should drop the more controversial and unsupported statement that a combination of administrative models may be appropriate."

"Involving local governments, non-profit organizations, schools, community and trade organizations and trade allies is indeed important. But unified utility administration is essential for having program portfolios that can be counted on in a resource plan."

"And unified administration is often necessary to have a comprehensive, well-coordinated program portfolio, rather than a

disjointed set of overlapping program pieces that do not support each other and lead geographic and other gaps."

MR. SCHWARTZ: Thank you. Are there any questions or comments?

MR. MESSENGER: I have a question. In order for me to figure out how to react to your recommendation, I'd like to know what your definition of the word "administrator" is. What functions does it include? Does it include setting funding levels, evaluating programs, delivering programs, etc.

MS. HORWATT: I would prefer to defer that to our written comments. I've been back in this arena for two and a half days after five years away, so I don't want to state too much of the company's position beyond what we have prepared here. But we will address that in our written comments.

MR. SCHWARTZ: Well, welcome back.

MS. HORWATT: Thank you. It feels good to be back.

MR. SCHWARTZ: Is there anyone else who has a prepared statement they'd like to read for the record? Okay. Then we'll move on to our

second panel today.

This panel is going to address questions regarding the need for goals for energy efficiency, and if there is a need for goals, perhaps what those goals should be.

Before I introduce the panel, Sylvia Bender of our staff will make a short presentation that will get us thinking along the right lines here.

MS. BENDER: I'm pushing the right button, but nothing is happening.

MR. SCHWARTZ: Can someone assist Sylvia? I'm going to introduce the panel now, while we have this opportunity.

Starting on my far left, we have Jay Luboff of the PUC. Next to Jay is Jeanne Clinton of the California Power Authority. Mike Messenger, California Energy Commission, and Pierre duvair, an environmental economist here at the Energy Commission, in the Climate Change Program.

And now I'll turn this over to Sylvia.

MS. BENDER: Okay. I'm going to try and stand where I can see more of you and you can see me, and I can read something anyway.

The point of this particular discussion topic is really to get at two things. It's to get at the issue of goals, the issue of targets, perhaps, within goals, and then to get at the issue of funding levels and how we might choose a funding level.

What you see before you now is the goal that comes from the Energy Action Plan itself, "ensure that adequate, reliable, and reasonably priced electric power and natural gas supply, including prudent reserves, are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers."

Within the Energy Action Plan there are several specific actions to fulfill this goal that relate to energy efficiency. And those are the ones that you see up here now.

First of all, "To look at new and remodeled building efficiency and increase it by five percent. To improve air conditioner efficiency by ten percent above the federal standards, looking at new state buildings and making them models of efficiency, creating customer incentives for aggressive demand

reduction, increasing local government efficiency programs, and providing investment awards for energy efficiency for administrators of programs."

As part of our charge to analyze some of this work, we looked at the first two goals that are there, the two goals that have targets associated with them, to see how much impact these would really have on reducing our peak demand going forward, or by 2013.

We did the same kind of analysis, or similar to what we had done with the DSM scenario, where we got a three percent reduction at the end of a hundred percent increase, doubling in fact our current PGC funding.

If we add on both of these goals, the five percent in building and ten percent above federal standards, we would achieve another .4 percent. So it's a very small portion of what remains, and it's clear that we're going to have to do a lot of other things to fill in more targets.

Perhaps more specific goals, a lot of actions and strategies to fulfill the rest of our actions up here. That brings us to the point of should we try to set some kind of overall state

target that we might work toward.

There are -- when I wrote this slide there were 12 states that I had identified that had some kind of renewable target, there are probably now more than 17-20 of them out there that have set some sort of specific renewable target or renewable standard, if you will.

For energy efficiency there are a number of discussion topics out there, discussion papers out there about setting some sort of energy efficiency standard, but very little action has actually taken place on this.

There are three states that have set a target, a specific target, and those are the three that are shown here. And they each take a different tack in setting that goal and that target. New York focuses specifically on gross state product for theirs; Texas looks at a reduction in system load, and Iowa has chosen to attack overall end use as their particular target.

So if we look at a target like this, what's the best way to try and measure something? There are three basic choices that are available for us to look at, and we've tried to sort of give you an example of each of these coming up here

now.

We could measure by consumption per capita or peak per capita; we could look at consumption per gross state product; or per employment. And we've put together some slides that will show you the impact of each of these, using our current forecast and going out there.

What we have here is both historic and forecast net peak compared to population. The one thing we noticed about this is how erratic it really is. It's so dependent on weather that peak would probably not be the best metric that we would choose to try and measure our target.

What might be a better choice would be consumption overall. It's a much more stable figure. As an overall measure this could be a general indicator of, again, how well we're doing in some regard. But it really doesn't tell us very much about why the changes are occurring or where they might be occurring.

So we looked at two other possibilities. One would be electricity consumption per million dollars of gross state product, a more economic related goal here. And this would be using the gross state product, which is based on the market

value of goods and services, or essentially sales going forward here.

Consumption would go down because gross state product is rising. It's not necessarily a real measure of changes in efficiency per se. Energy consumption is possibly staying the same even as the value of goods and services change. So, again, it may not be a perfect metric.

The last one we picked was electricity consumption per thousand jobs. This metric is more a measure of the economic well-being of the state, and assuming that industry and job mix stay the same it could tell you how you were doing energy-wise compared to productions per employee.

So these are four options that we're offering, and we'd like to hear some comments perhaps about these metrics, and whether any or the other might serve our purpose better.

The other thing we did, and is part of the report, is look at public policy goals from other public benefit programs around the country. There are two studies at least that have been done comparing different states, and look at what kinds of goals they actually have.

There are two chief goal categories.

There are the standard ones that we've heard for years -- market transformation and resource acquisition -- as being the basic types of underlying goals for these programs. In most cases these goals are mutual, they're not mutually exclusive. They're held simultaneously by the same organization.

The other two forms of goals that are less commonly seen are environmental improvement or economic development. So the next question we want to pose for you has to do with funding levels. And rather than choose a particular target or a particular form at this point, we thought it might be more prudent to set out four different methods for comment.

And these are four different methods that in some cases have been used in the past, or are being used now, but four different possibilities, ways to look for the right amount of funding to be set aside for energy efficiency.

Method one, we've used cost-effectiveness tests, looking at the past three to five years of program history. Looking again at avoided costs tests, like the total resources cost test, or social tests, or whatever else we want to

use. But looking at those things, which is essentially what we do now.

Method two would use least cost resource valuation to model how much is needed, which is what's going on more in the procurement proceedings at the moment.

Method three would look at historical funding, and compare it to what we think the next three to five years of the market might look like. This is something that we tried to do here in 1999 in our report that we prepared at that point.

And the last one, method four, would be to use conservation supply curves and avoided cost levels, which is essentially what the potential studies do.

So we would like to get some comment from people on, again, those different types of methods. So to sum up our findings for this section of the report on this topic, metrics for the targets and the goals need to match higher-level policy direction. Resource acquisition and market transformation are often mutually held goals in public benefit programs.

The Energy Action Plan actions are just the beginning of achieving the remaining potential

that is there. And efficiency goals should reinforce other energy policy goals, such as renewables, distributed generation, environmental protection, and demand response. So, we'll turn to the panel now.

MR. SCHWARTZ: All right. Thank you, Sylvia. I'll turn this over to the panel. If you'd like to make some introductory comments on this subject, and if you wish, to any of the questions raised by Sylvia, this would be the appropriate time to do so. Let's start with our guests. Jay, can we start with you?

MR. LUBOFF: Sure. I'll say before I start that the Commission, the PUC, has not adopted any goals and has no structure in place right now where they're looking at the option of goals, although, as signers-on to the Energy Action Plan, we're all on the same track in that way.

So, I'll try to limit my comments to what's happening that would impact the issue of goals, and I'll try to qualify it by saying anything that's my own -- from a staff perspective rather than anything else. The issue of where we are, and how to measure it, as Sylvia points out.

I'll go first to her issue of the different methods of looking at energy efficiency. I think we have different functions for those methods, and so those methods are not necessarily mutually exclusive.

In the procurement arena it is becoming -- if we go back to the old DSM way of looking at levelized cost and life cycle and comparing dollar per kilowatt hour so you can compare resources. How much does it cost for Kwh over the life cycle for energy efficiency, versus how much does a spot market cost a contractor or whatever. So I think there's some value at that methodology.

What it does not do in that particular -- and this is my own view -- way of looking at it from a life cycle cost, it doesn't take into account the benefits that we generally attribute in the total resource costs social test. It does not -- levelized cost doesn't take into account T&D adders, and it doesn't' take into account the adders for environmental benefit to one resource versus another.

So you kind of drop that out of the mix, if you just go that way. When you're comparing

programs to select, you want to make sure they're all cost-effective, because that's our law.

Legally we're obligated to do that, so the TRC, the total resource cost, is a great tool for comparing programs at the one to one level, and looking at a portfolio overall to see if it's cost-effective. That does not get you a resource acquisition comparison though.

So I wanted to kind of address that, at least. On the issue of per capita, we're kind of on board to use per capita, at least from the Energy Action Plan.

And while we may move in different directions, I think our Commissioners have pretty much gotten behind the Energy Action Plan, which looks at per capita and looks at some goals in per capita.

So, while it may have some issues on where it comes from, I think I can comfortably say that --.

COMMISSIONER GEESMAN: I'm sorry. I'm not clear on what you're saying, "comfortably." I took the Energy Action Plan as pretty unambiguously stating a goal adopted by each of the three agencies, at your Commission by a three

to two vote I believe, to reduce per capita growth in demand, or per capita consumption.

That seems pretty unambiguous to me. And I know that it is difficult in California governance to ever really establish a consensus on much in the energy area, but it would strike me that that is one particular aspect that there does appear to be consensus among the three principle agencies.

MR. LUBOFF: And I wasn't saying that that's not the case. Our Commission has voted for that. It is unambiguous in terms of what Sylvia had laid out, the three different ways to look at it.

I was stating that per capita is the way our Commission has voted and is behind that, and I was going to say next that, specifically in relationship to the procurement hearings, we have a Commission decision which tells the utilities to include all the energy efficiency in their forecasts, as well as lays out preferences, certain preferences to go for energy efficiency renewables as resources in order of environmental sounds.

So I think we're all on the same page,

and if I didn't state that clearly I apologize. I wasn't -- in terms of what you were saying, Sylvia -- that's pretty much where we would be headed, the per capita of the Energy Action Plan, rather than gross state produce or looking at employment consumption.

And in fact we have this potential study that is underway right now, and it is a summary study of everything that has been done to take a look at what the potential is.

And one of the metrics, or the key first metric, will be per capita income where we are, and try to get some consensus if we can about where we are on potential and per capital income. Which would lead to the potential for setting goals. You need to know where you're going, what the roadmap is.

So, in terms of where we are in actuality, we do have this potential study coming up, which would give us a sense of what is out there. We know other studies have been done, but we're trying to get a handle on that ourselves.

And then from there the issue of goals, with a sign-on to the per capita reduction goals on the Energy Action Plan, it would filter down to

programs and strategic plans and things like that. Thank you.

MR. SCHWARTZ: Thank you, Jay. Jeanne?

MS. CLINTON: I have some brief comments of a slightly different nature, focusing on achieving goals, without talking about the delivery part of it. And I'm going to highlight excerpts from the comments that I have on the table in the lobby area.

First of all, we believe at the Power Authority that goals are essential. The real question I think is as we start to more specifically quantify what we mean by a target in per capita reduction -- do we want one percent reduction, five percent, ten percent? Do we want it in three years, five years, ten years?

You know, how fast and how deep are we trying to go. And there's some very useful information that was presented earlier, in terms of portfolios of opportunity, that appear cost-effective.

So I think, when we're talking about goals, we need to say how much is enough, and how much do we need?

And need is not defined just from a

resource procurement perspective, which is typically looking at increments of additional or expanded resources, but also how much can we afford in terms of what is the impact on the ratepayer or the end user.

In terms of their total costs for paying for energy, not just what they're paying for efficiency, but what they're paying for energy.

I would also strongly encourage that the goal setting process -- and by this I mean when we start getting very quantitative and into metrics -- must be set with informed decision-making that includes stakeholders and market participant viewpoints, and is not necessarily limited to the world of research and analysis.

This particularly comes in in terms of how far, how deep, how fast kinds of questions. In the staff report there was a broad discussion of goals and examples, and I would suggest that we all will have to do more work on coming up with what do we mean by goals, because I would characterize the report as moving from one spectrum into the spectrum of what I would call philosophical goals, like market transformation for example, into what I would call more strategic

goals.

And then there's a discussion of quantitative goals and funding and selection goals and criteria, and those are really at different levels. So I think we have to sort of pinpoint a little bit of what those are.

I think the ones you cited in the report that the PUC uses for funding and selection criteria are great criteria, but I don't know that I would call them goals myself.

I'm going to perhaps speak heresy and say that the benefit of a metric is to measure progress, and that progress is more important than the specific unit of measurement or the absolute value of measurement.

The goal should be making progress in improving efficiency and we could argue until the cows come home about what's the right metric. The important point is to settle on one and move forward.

The metric is only the starting point for measuring progress, and we still need to go through what a lot of people call the best fit lowest cost considerations, and we want to look for smart implementation strategies that capture

synergies and all those things.

And we need to think about timing. Not everything will go along on nice smooth inclined or declined line. There are timing considerations in terms of need and lead times and things like that.

And apart from the underlying technologies and sort of the economic calculus that says how much of those things do you want to have, we also need to understand the delivery channels and the buying decision processes and timelines that will perhaps tell us maybe we can only go so far on one path and then we have to shift to a different path.

And maybe we can go faster on a different efficiency path. And by paths I mean maybe new technologies or market sectors or that sort of thing. But it's not a single line, it's a combination, a cascading set of progress that together aggregate into, perhaps, a single line.

So I just wanted to offer a few different perspectives there.

MR. SCHWARTZ: Thank you, Jeanne. Mike?

MR. MESSENGER: Okay. I think I want to talk about five separate things, about how one

goes about setting goals, and what do you decide on choosing what particular form of metric, and then I what to react specifically to the question posed by Sylvia in terms of whether the metrics proposed whether any one of those would work or not.

The bottom line is I don't think any of those could work, but I'll get there. So I think the first thing that we need to ask ourselves is why are we even thinking about setting an energy efficiency goal, and what are the primary motivations for doing that.

And depending on the answer that you give, you're going to set a different kind of goal. For example, if we're doing it for economic reasons I would want to be converting a lot of these metrics into dollars at present value.

If we're doing it for environmental reasons I'd want to make sure that the metric is linked to an environmental consequence or improvement in the environment so that people could see a linkage.

If we get to the goal we're going to get, I don't know, let's say 20 percent less emissions, or ten percent improvement in air

quality, if that was possible.

If we're doing it, at least the way I read the staff paper, primarily to motivate administrators to do good things, to achieve more kilowatt hours within a fixed budget, maybe five percent more kilowatt hours every year if you're budget is $225 million, then you'd want to set a different metric.

So I think, and then I think the final possibility which my reading of the Energy Action Plan is one of the primary drivers is we're doing it for reliability reasons.

We feel like there's some reliability reasons to continue to decrease energy use per capita, so you'd want to set a different kind of metric if your reliability was the primary driver. So I think we need to talk a little bit about what's the primary driver before we actually set it.

The second thing I want to say is that the choice of metric is very important and I will give you two examples of why I think it's very important from California's history as well as world history.

In California we set up a metric in the

mid-1990's that basically said utility administrators will get rewarded based on the fraction of net savings that they generate from their programs. And it turns out that the weight in which that metric was calculated assumed that rebate payments were neutral.

In other words, you could pay more for the rebates and still have the same TRC ratio. So the rebate was assumed to be in the numerator and the denominator and sort of washed out of the equation.

So there was an incentive or a bias towards more rebate programs, based on the way that the metric was set. And in fact, you look at history, there was a dramatic increase in the level and the amount of cash rebates handed out to customers in that same time period, and it was because the administrators were just responding to the metric to generate the most TRC net benefits, both because the formula produced higher values, and because customers respond to cash, and that's the easiest way to do it.

So there was a built-in bias against sort of innovative program technique that didn't pay off the cash, because if you paid off the cash

you got a better score. So the metric is really important in that sense.

The second one I think is one that probably people have heard about before, which is the classic metric of an English sea captain who arrived on an island n the south Pacific, and they were having a lot of trouble when the troops came ashore with rats.

There were a lot of rats on the island. And he said to his soldiers, how do we get rid of this problem. And for awhile they tried using these big blunderbusses and shooting them, and that wasn't working out too well.

So they set up a new metric. The guy said "okay, look. I'm going to give out pieces of gold for every hundred dead rats that you bring to me. Every week we're going to have a weighing, so to speak, and people bringing in dead rats get gold."

So there's a real pay for performance. And what he didn't realize is that the natives thought this was a great idea, because they immediately started breeding rats, and in fact they set up rat colonies. And they would bring in more and more.

And he was wondering, the rat problem didn't go away, and he kept on handing out the money. So that's another reason why you have to be careful about the metrics.

So once we sort of look at these different metrics I think that you need to do three things. Jeanne alluded to one of them.

First, you need to make sure that whoever you want this goal to affect that they're involved in setting the metric. So if you want effective administrators or the public or policy makers in other areas you need to make sure that they're involved in setting the metric.

The second thing is that the metric needs to be available in time series form so that you can update it every six months or every year so that people can track progress against it.

What tends to happen is if you set up really esoteric metrics and you have data collection problems then people lose faith and in fact don't even care anymore about the metric because they can't get the data to see how they're doing.

And I think the final thing that's important is that you think about giving feedback

to people who do a great job towards contributing towards that goal.

So say for example we set up a metric and said we want to save five percent more in terms of energy and peak savings this year than we did last year. And let's say that San Diego Gas & Electric did a great job and they doubled their savings.

You want to have some kind of system where they would get awarded for contributing towards that goal and then spread that information out to the whole community that's involved in this metric process.

And similarly, if we're going to set a statewide goal, I would argue that, if you're going to make that work, you need to have some kind of mechanism that will recognize the people who've done a significant increase in part of that contribution and reward them occasionally, whether it be once every year or once every five years. All those things could be worked out.

Okay, now let me get to the final point, which is what kind of a metric should we set. Because I think what we're trying to do is achieve more savings, we should set the metric in the form

of more savings.

And that's why, even though you might want to set a goal in terms of consumption per capita, I would argue that it would be more effective to have the actual metric be savings per capita, so you could either use physical units like kilowatt hours or BTU or however you wanted to use that.

Or you could convert it to dollars. You know, last year our program saved a typical Californian two dollars, and we want to increase that to 2.50 over the next five years.

So you set that goal in terms that people could understand, dollars per capita, as opposed to these other metrics which I think the energy audience might be able to understand, you know, kilowatt hours are kilowatts.

But the broader public wouldn't understand that as a goal or what the use for that might be. I think, in terms of figuring out the level, the best thing to do is to average the last five years of experience, and then set the goal ten percent above that.

If I had to do it today I'd go back and I'd look at the records and say, well for the last

five years we saved X amount, either on a program basis or for the state as a whole and our stretch goal should be ten percent above that over some time period.

And I'd want to make sure that I normalized that goal for both weather and economic growth, because otherwise you get these graphs that wildly gyrate and there's no link between cause and effect, and I think Sylvia has a couple of good ones that show, for example, kilowatt hours per capita, that just go up or down based on the weather cycle, and probably other cycles that are not evident from the graph.

And then I think the final thing is that you want to make sure that there's a feedback mechanism that's independently monitored by people who weren't in charge of setting the goal.

And that's probably an idealistic consideration, but what I've noticed is that when program administrators are in charge of both setting the goal and measuring it, they tend to meet it.

And so what I'd suggest is that you need to set up a system whereas -- let's say, and I don't even know if this is politically correct,

but -- if there were three agencies that set a goal, you'd want to have some independent party check to see if those three agencies met their goal.

And that's true whether it's at the agency level or the administrator level or even smaller. And so I think it's important to have credibility for the goal by having some kind of independent process to actually figure out whether you're meeting your goal or not. And basically that's all I have to say. Thanks.

COMMISSIONER GEESMAN: I'd like to cut through a lot of that, and --.

MR. SCHWARTZ: Commissioner Geesman, I was hoping to get all the panelists to make a presentation, and then have discussion afterwards.

COMMISSIONER GEESMAN: Yes. I think I'd prefer if -- at the risk of impoliteness -- to interrupt our sequence, to reflect a bit back on what I believe motivated President Pevey (sp) in framing the Energy Action Goal the way in which he did.

And I've heard him speak several times subsequently about bending the per capita demand curve downward. I think his intent -- which we

embrace and I personally embrace as well and commend him for framing it this way.

I think his objective was to create a transformational goal, to send a clear message to all of the elements of the state bureaucracy, the utility bureaucracy, the other stakeholders that occupy themselves with participation in the energy regulatory process in California, that our objective, going forward, was to reduce per capita consumption.

We've never had that as a goal before. I think it will be extraordinarily difficult to achieve, irrespective of what timeframe you apply to it. I think it requires a variety of subgoals and submetrics, much of which you've addressed, although I didn't quite follow the rat colony metaphor.

But I think it is equivalent to putting a man on the moon, and I think his intent, and the agencies intent in embracing it, was to send a message in the clearest possible terms as to the direction we would like to go, this year, next year and on into the future.

And I don't understand what is ambiguous about that, what is confusing about that, and why

it's not a pretty good ordering principle as it relates to structuring government programs.

MR. MESSENGER: Would you like me to respond or --

COMMISSIONER GEESMAN: I'm just venting, and I apologize for that, but --

MR. SCHWARTZ: Go ahead, Mike.

MR. MESSENGER: I think it's absolutely true that it's an unambiguous principle in terms of reducing kilowatt hour per capita. That's a goal that people can understand.

But in terms of tracking it and making it useful to people who are, for example, in the business of running programs, you might have to create submetrics to --

COMMISSIONER GEESMAN: You design the rocketship, that's not our job. We appointees are only visitors here. The permanent bureaucracy is going to have to design the space program. But I think we've set a pretty clear target.

MR. MESSENGER: Yes, I think we agree. And I was really addressing the second level, which is how do you get there, how do you build the rocketship to give a set of metrics that will provide some level of guidance to everybody in the

system. So, I'm done.

MR. SCHWARTZ: Okay. Pierre?

MR. DUVAIR: Good afternoon, everyone. I'm with the Climate Change Program here at the Energy Commission. A relatively new program, but the Commission's been active in climate change for a number of years. I've got a few points I'd like to provide.

There's a lot of parallels to goals or targets within the greenhouse gas arena that parallel very well to energy efficiency type targets and goals.

But first, to provide a little bit of background. Obviously, Californians use a lot of energy. Most of it pretty efficiently, some of it not so efficiently. Our electricity consumption has been relatively flat, and certainly less than the rising average in the U.S.

But there are a lot of reasons why efficiency and conservation are important, and climate change is now becoming one of the additional reasons to be looking at energy efficiency. There is a growing consensus that humans are influencing our climate in potentially adverse ways.

There's an awful lot of science that has been brought to bear on this issue and continues to be brought to bear, and agencies like NASA and things are providing a lot more science very quickly, at a very rapidly rising pace.

In any event, California is certainly vulnerable to a lot of the adverse effects of climate change. We're very dependent on precipitation for our water supply. We have a lot of coastline.

Sea level rise can cause a lot of problems, especially in combination with rises in extreme weather events, and the frequency of extreme weather events can hit California pretty hard.

These are -- climate change is often viewed as sort of an environmental thing, but really the consequences of climate change can actually be very economic, and climate change is equally an economic issue for the state and all people, as much as it's going to impact our ecosystem and a lot of environmental parameters.

Public health, there's an enormous amount being looked at now about links between climate change, climate variability in particular,

and how that's going to affect public health.

The U.S. signed on to the Kyoto Protocol in 1997, agreeing to cut our gas emissions by seven percent below 1990 levels averaged over what's called a first commitment period between 2008 and 2012.

California contributes about 1.4 percent to global anthropogenic greenhouse gas emissions. Our population is only about .6 of one percent of world population. We emit about, a little over six percent of U.S. emissions of greenhouse gases. We have a much higher percentage there, about 12 percent of the U.S. population.

States, local governments, businesses, are all starting to voluntarily set greenhouse gas reduction targets. New York State energy plan, in addition to the electricity target, they have 25 percent below 1990, they just set a five percent greenhouse gas emission target. Five percent below 1990 by 2010, and then 10 percent by 2020.

New Jersey's had a goal probably longer than any of the states where they want to get to three and a half percent below 1990 emissions by 2005. That's right around the corner, you know, I'm not sure what kind of progress they're making,

I haven't seen their statewide inventory in awhile. But they've got the closest target coming up.

The New England states, in combination with some of the Canadian provinces, have set some targets, and they're trying to get back to 1990 levels of greenhouse gas emissions by 2010, and then cut it another ten percent below '90 by 2020.

So many of these targets are out in the 2010 timeframe and the 2020 timeframe. A lot of California cities are setting greenhouse gas reduction goals or targets. Chula Vista, Los Angeles, Oakland, Berkeley, they all have greenhouse gas reduction targets ranging from 15 percent to 30 percent below 1990 by 2010.

The public in California and really throughout the U.S. support taking some action on greenhouse gas emissions. There was a poll that was conducted of about 2,000 California households last summer that suggested that about 62 percent supported some need to address greenhouse gas emissions and climate change. And 81 percent favored requiring the automakers to come up with greenhouse gas controls on new automobile sales.

You might be familiar with the Pavli

(sp) legislation. Nationally, a recent poll showed the same kind of pattern nationally. About 90 percent support the U.S. cutting its greenhouse gas emissions. Some three quarters support actually regulating carbon dioxide and greenhouse gas emissions, another 88 percent supported our country's commitment to the Kyoto Protocol.

But unfortunately the survey also showed, when asked a number of questions about if this is going to cost you in higher prices of goods and services, that those percentages dropped off fairly quickly.

Europe is certainly politically very committed to cutting its greenhouse gas emissions, and have actually taken some pretty aggressive measures to reduce their emissions. But most of the indicators are that most of the European countries are also very far behind meeting their Kyoto targets.

The Energy Commission has had quite a background since the late 80's in climate change. The state of California is doing a number of things to try and reduce these emissions. Energy efficiency is certainly a key area to the state cutting its greenhouse gas emissions associated

with power production.

We've created a voluntary registry. We've been conducting statewide inventories since the late 80's. We have programs like sustainable buildings, blueprints for sustainable buildings, or green buildings, and greening the state fleet. We conduct an awful lot of research on climate change.

Right now the Energy Commission's PIER program funds a lot of research on climate change, including sort of the benefits and costs of ways to mitigate greenhouse gas emissions. And then we also have the renewable portfolio standard that was passed this summer that will help bring about some reductions in greenhouse gases.

There's been a team of state agency staff that have been meeting for about two years trying to identify a range of topics related to how the state can reduce its greenhouse gas emissions. And again, energy efficiency being a key part of that strategy being developed, and how we can promote energy efficiency.

There's an awful lot of parallels, as I had mentioned, to metrics for both greenhouse gas reduction goals and energy efficiency goals.

The Bush administration has chosen an intensity metric, greenhouse gas emissions per dollar gross national product. Kyoto has gone more towards the percentage of an absolute amount from a given base year.

You can look at greenhouse gases per capita, and set a target that way. Or you can look at reductions by sector of the economy, both for energy efficiency within a sector or greenhouse gas reductions within a sector.

I guess a couple of key points that I would add to this is that absolute emissions is what matters to the atmospheric concentrations of greenhouse gases, which are what is believed to be driving the human influence on our climate, and so measures or metrics that really address the absolute increases in greenhouse gas emissions is going to be a pretty important focus.

And then the final point would be that, much like efficiency metrics, there is a dramatic need for standardized, reliable, and transparent accounting methods for any metric that's developed.

And many in the arena of the Kyoto protocol and greenhouse gases are wrestling with

how to start to come up with standardized methods for accounting for greenhouse gas emissions.

And any type of metric in energy efficiency is obviously going to need standardized, reliable and very transparent methods for accounting. That's it.

MR. SCHWARTZ: Okay. Well, thank you all. And now I'd like to open the floor for questions of the panel. And I will start by asking what does anthropogenic mean?

MR. DUVAIR: It means you caused it.

MR. SCHWARTZ: It means I caused it. Okay. All right. Questions of any of our panelists?

MS. GRIFFIN: Sylvia, could you put up the chart on consumption per capita?

MS. BENDER: Sure.

MS. GRIFFIN: And people should be able to find it in their handout.

All right. We have up here the historics and forecast of Kwh per person in California, with 2001 being the last historic year that's on this chart. And I wanted to ask the panel members whether they thought this is basically a level sort of lower than the trend in

the 90's.

One, do you think that that baseline is plausible, and do you think a one percent or five percent or ten percent per capita reduction are plausible. That we could achieve them.

MR. SCHWARTZ: Mike?

MR. MESSENGER: First question. I think that those data need to be massaged to take out weather effects, and then the baseline would be plausible. I think what you seen in 1999 and 2000 is relatively warm summers that are driving those numbers up, and then in 2001 you have a relatively cool summer as well as the impacts of all the emergency programs and/or fear of blackouts.

I think when you take the weather effect out it's going to be a lot flatter. There won't be as much variation between 1995 and 2000. And now to your second question. No? You want to rebut that, Tom?

MR. SCHWARTZ: Yes, you need to come to the microphone. At our peril, we invite you to the microphone, and introduce yourself.

MR. GORIN: I'm Tom Gorin of the California Energy Commission. I work on the Demand Forecast. I think that weather may be a

part of that. You also have to look at the scale on the left hand side.

And if you actually take that graph back to about 1976 or '77 you get a fairly flat trajectory. Accounting for economic growth is another artform, so adjusting that may make it flatter but where we are now, in 2001, is also an artifact of our economic condition now.

Are we out of the economic condition we're in now, and will it get better or will it get worse or will it stay the same? And those are all going to drive per capita consumption.

MR. MESSENGER: So what I'm hearing you saying is there could be more adjustments besides weather, including economic adjustments, but you're not sure if it would change the story much?

MR. GORIN: I don't think it would. And I think part of that is the business cycle, because in 1990 we were where we were in 2000, because the business cycle came down in '91 again.

MR. SCHWARTZ: I almost hate to ask this question, but Tom, what's your opinion of using this as an overall metric, this particular measure of consumption per capita?

MR. GORIN: It's the metric that has

been chosen.

(laughter)

MR. SCHWARTZ: Yes, I see that. That message is coming through quite clearly, yes. It is the metric that has been chosen. We'll just put that as a given, yes.

MR. GORIN: Now there are also a few other state agencies that in the past have made goals, some have come to fruition and some have not. I mean, it's a good goal, it's a good talking point. I was thinking, if the aluminum industry comes to California that's probably not the metric you want to use.

But then we would say, but we have this huge increase in consumption because this industry came. You know, we could have another huge increase in consumption because we have another internet explosion, or whatever the next energy-intensive growth pattern is, but I'm not sure what else you would use.

It's a good talking point, but you need to put a lot of caveats around it.

MR. SCHWARTZ: Okay, thank you.

CHAIRMAN KEESE: Let me ask a question. In other words, without adjustment. You

suggested, I believe, that if we look at a 20 year period you can see a trend, and if you adjust for weather, for economics and everything, you can bring it back closer to a straight line, but you'll have the same trend. Is that what --?

MR. GORIN: It's been relatively flat for the last 20 years.

CHAIRMAN KEESE: Without adjustment. So if you look at -- we're just looking at a little area which makes it look like it's fluctuating, is that what you're saying?

MR. GORIN: Yes. And this is a trick that I use sometimes with rats. If you make the scale small enough that looks like a big difference. But if it was from, you know, one to ten, that would look like a straight line.

MS. BENDER: I was just going to add, I could either put it back up or the very first figure that we had up this morning shows it from 1960. I'd have to change the presentations, but it's the first figure in your packet.

There, now this is from 1960, and again, it's flat from pretty much 1970, '75.

MR. GORIN: Which is, coincidentally when the appliance standards --.

CHAIRMAN KEESE: So you're saying this is an acceptable -- we've been told this is the metric, and it will work.

MR. GORIN: But that's constant.

MR. MESSENGER: But they want to get that to go down.

MR. GORIN: That's a normal goal.

MR. MESSENGER: In your opinion is it a reasonable goal?

MR. GORIN: I'm trying to figure out how to achieve it. I'm not sure.

MR. MESSENGER: I'm trying to adjust the second part of your question, Karen, which is what's reasonable. Given that it's been flat for 20 years, what's reasonable.

From my perspective, the first order of reasonableness is to try and make sure that the drop that you see there from 1999 to 2000 or 2000 to 2001 continues. And so, I think a reasonable way of doing that is to simply say we want to see that five years from now that number is either -- pick a number, five percent or ten percent lower than it was in the year 2000. And that's the good high-level goal.

In terms of whether you want to use that

now to motivate people to achieve savings I would again argue that in order to actually get things that are measurable you need to set some kind of either kilowatt hours per capita or dollars per capita savings goal that would be achieved by a whole set of players.

And then five years from now reconvene, and if the trend is still flat then you need to talk about what other types of policy -- given that this is primarily what I'm going to call program and regulatory policy we're playing with right now -- would lead you to the place where you could get to lower per capita use.

And quite frankly, if it's always lower per capita use for all energy as opposed to just electricity I would argue that you need to start thinking about tax policy in order to make it feasible.

Because until you have a tax policy that has -- as I think the earlier speaker suggested -- taxes used for the infrastructure to support the infrastructure, you're not going to be able to get there. If you're continuing to tax income and intellectual capital that's not going to have an effect on your energy us system.

So, in the long run I guess I'm pessimistic, but in the short run I think you can continue and make some goals in the electricity sector only. It's just when you go to other forms of energy that you have to step outside of the box of just programmatic policy.

MS. CLINTON: May I --?

MR. SCHWARTZ: Yes, please, Jeanne.

MS. CLINTON: I want to give just a simple answer to Karen's question. And I would say is it technically possible to do one percent or five percent or ten percent better? Yes. Is it economically possible? Yes. Can we do it? It depends on whether we really want to.

If we really want to, I think we can. And do it at a cost-effective way, and with sensitivity to choice and environment and that sort of thing.

MR. SCHWARTZ: David? You want to come up?

MR. ABELSON: I just want to ask a quick clarifying question to Tom or anybody else who might know the answer with regard to this graph that's up here. A couple of pretty major variables were mentioned by Tom as something that

could screw up a per capita metric -- huge weather variations, an enormous shift in the type of economic base of your economy, such as the example you gave of aluminum.

I'm looking at a flat chart, and I remember all kinds of weather changes, and I remember all kinds of economic changes that took place during that 20-year period here in California. Does anybody know whether that flatness is flat because somehow it was adjusted for those things or not?

MR. SCHWARTZ: Would somebody like to answer that question?

MR. GORIN: I think this is unadjusted. This chart here, the scale on the left hand side is in thousands, where the previous chart was in ones. If you put that level from '75 to 2001 on a smaller chart it's going to go like this, and be widely variable.

MR. ABELSON: My point Tom, was a little bit different, depending on the answer that you just gave. Which is that, if this is not an adjusted chart, if this basically doesn't try to normalize for those variabilities, given a reasonable scale, as you were referring to, that

parade of horribles you mentioned doesn't seem to kick in.

MR. GORIN: Well, it kicks in in a very small way. Where, out here in '98, '99, 2000, the internet boomed, and the different measurement of the economy, and everything was going great, and then all of a sudden we had the energy crisis, and people went wait a minute, we can conserve, you know. But you're right, it's not a big -- on the greater scheme of things --

MR. ABELSON: On the greater scheme, in the early 80's, when we had that recession -- (inaudible)

MR. SCHWARTZ: Can we hold up for a second? Dave, you're not going to be on the record on this. That's okay. Scott, do you want to add to this discussion?

MR. MATTHEWS: Yes, I'm Scott Matthews, I'm the Deputy Director for Transportation Energy here at the Energy Commission, so I feel compelled to speak. So I'd obviously point out that that's electricity only per capita, rather than total energy.

And I think you'd see a different story, because we didn't have appliance regulations for

transportation or industrial or a lot of other sectors that -- so that the per capita energy for the state -- I don't know if we've run those numbers for awhile, but I would guess that they've gone up as opposed to what we were able to achieve in electricity.

And we have some pretty ambitious goals in the transportation sector that hopefully the Commission will adopt on the 25th of June. But they're going to be difficult to achieve, and certainly Pierre and Climate Change has to worry about total California emissions, not just the electricity sector, which is one sector that we're pretty proud of what we've achieved. But we've got a lot of work to do elsewhere.

MR. SCHWARTZ: Karen, are you ready to jump in and say --?

MR. GORIN: I want to add one more point to what Scott has brought up. Not including natural gas used for electric generation, if you had this chart for natural gas it would be downward sloping because of less use for space heating with more efficient buildings.

MR. SCHWARTZ: So natural gas used per capita has declined?

MR. GORIN: Has declined.

MS. GRIFFIN: The only other thing I wanted to bring up was that, at least over the last ten to 15 years, we've been adding 500 to 600 thousand people a year, so this flatness is already an incredible achievement. But we are projecting a continued huge increase in our population.

So just maintaining this still requires work, and then we're looking at what is a reasonable or a possible amount of additional that can be achieved in face of the other options that we have to meet our electricity and natural gas needs.

MR. SCHWARTZ: Mike?

MR. RUFO: Mike Rufo. I just wanted to comment on this chart, because it's one I used a lot in the last couple of years in the preamble to the efficiency studies. I think Tom's points about the concerns for the metric are good, but over the last 25 years this metric has been pretty good.

And what's interesting about it -- I did a real dumb calculation that maybe others at the CEC have done. But if you take the California per

capita and you look at the U.S. trend over the same period of time, and you multiply the California population by the U.S. line, as if we hadn't kept it flat, you actually come out with the same savings that we've been tracking through Messengers and et als. spreadsheet for the last 25 years. You get about 10,000 megawatts.

So if we think about the overall U.S. as a control group -- and it's imperfect and we know that there are other structural differences -- it gets back to that question of reliability, too. Are we actually getting these savings?

That metric actually happens to have worked pretty well, in terms of giving you back the same number in some respects as what we've been tracking. Whether that will be holding in the future I don't know. But I think if you do have that kind of a metric you almost have to have some kind of control to compare against.

Maybe the U.S. is too easy of a bar to jump over, we need something tougher than that.

MR. SCHWARTZ: Yes, Patrick?

MR. EILERT: Pat Eilert from PG&E. Just to speak very briefly on what the potential could be. I remember one number from the opening of the

current appliance standards rulemaking that the Commission started the other day.

And that is the sum of the code enhancement proposals before the Commission, in terms of electricity savings, is equal to -- the potential is equal to -- approximately five percent of the energy use here in California, the electrical energy use in California. And there's a lot of other things going on.

CHAIRMAN BOYD: Don, I'd just make a comment. I appreciate the struggle we're all going through on proper metrics. The one thing about this particular metric is it's internationally used, accepted, recognized.

And has been relatively important to the nation-state of California for the last two or three years in my involvement of selling the nation-state of California in the international market when it comes to trade and commerce, and those people who are sensitive to climate change, as Dr. duVair pointed out.

And serves us well in that forum. When you're talking turkey with a Sweden or a Denmark or a Germany. And they warm up to you right away when they realize you are atypical as compared to

the rest of the United States in that you, obviously, have done some pretty good things in a very progressive -- and at least using that as a metric -- are a pretty good place, so let's talk trade, etc. etc.

So there are other values associated with those tools that you use to represent certain values and certain things. So, as skittish as this can be, it has value in some forms as a universally recognized measurement of what some people deem progress.

The other side of the coin is, and Scott brought up transportation -- unlike the rest of the world and the rest of the United States, the transportation sector in California contributes the majority of our greenhouse gas emission.

So we're way ahead of everybody else on electrical and gas-derived energy use consumption, control and what have you. So that is another positive statistic. All that probably gave rise to why the infamous Hadley Bill was passed.

MR. SCHWARTZ: Good points. Thank you very much.

MR. LUBOFF: I'll say one thing, Don. At the Commission we are, as I said, looking at

this potential issue. And because of the Energy Action Plan and because this is a reasonable measurement, I guess would be a way to go.

We're kind of looking at it in terms of its reliability and ability to bend. That's a very difficult issue. And it relates specifically to -- I think Mike put it up, or Sylvia -- what 100 percent maximum efficiency would look like versus high efficiency versus standard, you know, keep it as we're going.

If you were going to bend this you may have to go to what many people might on the surface see as not a great idea, 100 percent rebates. In other words, you buy 100 percent of a measure for people, because it's less expensive than buying capacity or an energy contract in some way because it's better at the avoided cost level.

A lot of the potential numbers, at the maximum end, are still cost-effective against other resources when you look at it from a procurement point of view. So if you're going to bend this curve you're going to have to look at the issue of energy efficiency as a resource that you purchase against other resources. And then determine what your incentives might be, even if

they look outrageous to you on the surface as oh, my God, we're giving 100 percent away.

I remember up in the northwest we did the Hood River Project, which was going into a town and virtually giving away a lot of energy efficiency measures because even though it was "giving it away" it was still less expensive than generation. So I think that's one of the big policy issues that need to be faced in terms of this energy efficiency thing.

MR. SCHWARTZ: When you say buying the measure you're not including the installing what it is that you're purchasing for people, is that right?

MR. LUBOFF: Not necessarily. I think it could be anything, but the question is when you look at the maximum potential and then you look at what incentive you would give to get that, and it still falls within a total resource cost that's reasonable, over one -- or maybe it's up to two -- and it's still cost-effective against avoided costs, you run into that immediate cultural or social aspect that says we're going to give away water heaters that are energy efficient at 95 percent.

Well, in fact, as a system we may not be giving them away, we may be bending this down, and yet we have to face that different way of looking at it.

MR. MILLER: Bill Miller, Pacific Gas and Electric. If we're contemplating major changes -- two things. If you set long-term goals you should measure them long-term. I once had a job explaining changes in sales this month, this year, compared to changes in sales this month, last year. And it was not a terribly useful exercise.

So if we're going to do long-term goals and say in a certain number of years we're going to have a decrease in this state, we should measure long-term. We should not get too wrapped up in what's happening this week or this month. We should keep that perspective.

But the other issue comes from, sort of, in Jay's remarks -- and I don't know how you treat it in what is a policy document. But if you were to strenuously pursue a decrease in per capita electric usage in California today you would probably have to confront the issue of stranded costs on the DWR contracts or somewhere else in

the system over the next two or three years, until those start to expire.

Which is not to say that it isn't an appropriate goal, but that in the application of the goal it will run into other important considerations, which will have to be balanced. Outside of that specific example then I think that's something that you should be aware of as you pursue this particular avenue.

MR. MILNE: Paul Milne, Procter Engineering Group. And I just want to raise a concern that we have about total electric use per capita being the paramount long-term goal guiding energy efficiency policy and program.

That, especially noting the significance of peak load reduction as a key guiding element. And that there may be -- well there are, we believe -- arguments for needing to balance those two concerns, so that peak load reduction is incorporated in the progress made in the energy efficiency programs.

So for this to stand as the singular goal can distort the development of policy in an unintentional way. Taking a very important and established prime objective and orienting all work

towards it.

So we would urge consideration for at least a discussion abut how peak load, the progressive reduction of peak load operates in tandem with this, and that targets for that ought to be established in tandem with these so that the policy choices are made explicit.

MR. SCHWARTZ: I should mention to you that the Energy Action Plan also includes some target goals for the load management or dynamic pricing programs also. We're just, at this point, focusing on one of these goals that are in that plan, but that's a good point.

MR. MILNE: We just brought it up out of the discussion here which keys in on this as a suitable and appropriate paramount goal. And that is where we could see that this would lead to neglect of the tandem consideration.

MR. SCHWARTZ: Can I just ask you a informational question for my benefit. Can you tell me what your firm does, what kind of work do you do?

MR. MILNE: Procter Engineering Group has a number of projects on energy efficiency, and is a third-party provider in energy efficiency

programs, one sponsored by the CEC and others sponsored by the CPUC.

MR. SCHWARTZ: Thank you. Any other discussion or questions about the whole topic of goals, not just metrics, but what percent goal we should have, or any other thing in this area? Eric?

MR. WORRELL: Eric Worrell. And I think I should just clarify a point there. With the current generation mix there may be some benefit to putting that peak load as an asterisk and keeping the efficiency goal, because we're trying to move to more efficient generation overall.

And getting peak load down is one of the ways you move to overall efficiency.

CHAIRMAN KEESE: I want to make one more observation. Commissioner Geesman very clearly explained where we were on the Energy Action Plan. I don't think anybody who crafted that felt we were adopting an easy target.

And I certainly don't -- I can speak for at least six of us, and I think we got 13 votes eventually -- we are very serious about this. There is a problem out there, and we must approach it. And I think the fact that we've had straight

line for almost 25 years gives us about as good a metric to work from as we can possibly have.

Now, will we achieve it? I'd go along with Commissioner Geesman, that's for other people to figure out. We've adopted the target, now let's look at very innovative steps. What are we going to have to do to do that?

And it's not business as usual. And none of the three agencies involved in this believes it's business as usual. We're going to have to look at some really innovative things.

And the Energy Action Plan, as was characterized earlier -- the strategies we looked at, are merely the start. That is -- we never expected that everything that's in there was going to get us to our goals. We're just going to have to keep looking at everything we can possibly find to move us.

And I'll just say peak. Peak is definitely a concern that we cannot, we cannot set the discussion of peak shaving aside. That is a critical need. But, this just seems to us to be extremely important.

And target number one, because we got into this because of generation, and we got into

this because of reliability, and we got into this a little because of transmission. But then we said now where do we start. And this is where we start.

MR. SCHWARTZ: Given that this is the first IEPR ever attempted, what are your expectations, Commissioner Keese, on recommendations in this IEPR that are innovative for achieving, let us say, this five percent goal? Would you expect to see it in this IEPR or future IEPR's?

CHAIRMAN KEESE: I certainly hope that out of this process we have a -- we come up, in this forum, with a list of options. And I would hope that, between the Committee, the Commission, and our public outreach, that then we will prioritize those options and move forward with them.

I think we can -- I do not see this IEPR process as something to be put on the shelf. I think the Action Plan kickstarts it. I certainly hope the Action Plan will be fully implemented in this. But I think this has got to -- when we get the IEPR I hope it's a broader action plan for all state agencies to use.

And under the setup the legislature gave to us, the governor will adopt it, sign it, and it will become the policy. And then we move forward. So that's why I've suggested, we're the scribe here, but we need all state agencies to work and come up with plans.

I'm very pleased to hear what the CPUC is thinking of. That's a great idea that should be up for discussion. That should be one of the topics we are given as an option when we make our decision as to what we'd like to see in the final IEPR.

MR. SCHWARTZ: Thank you.

MR. LUBOFF: Let me say that, Commissioner Keese, that that was me. I can't guess for the Commissioners.

CHAIRMAN KEESE: I like the thinking at the PUC, how's that?

CHAIRMAN BOYD: Don, don't forget that the title of this is Integrated Energy Policy Report, and we have a responsibility to mine the resources of the state in lots of arenas, this one today, and identify policy issues that need to be addressed either by state agencies and our collective group possibly through the Energy

Action Plan, and other policies that need to be addressed at the highest levels of the state, and/or by the legislature, including changes to current practices that we see may interfere, you know, with a positive future for the state.

So, we're looking at all these kinds of things.

MR. SCHWARTZ: Dave, take the microphone?

MR. ABELSON: I guess I'd like to direct this to one or more of the Commissioners, because they would be perhaps most likely to know the answer to this.

I guess I got confused as the conversation went along about the metric of the per capita, and the fact that the Energy Action Plan has embraced some version of that along the way. And then the comment that Scott and others made about this line not having anything to do with what we're doing n transportation.

And I think the issue that Sylvia mentioned when she did the introduction, which is that we have little if any information as to what's going on with natural gas as sort of part of this presentation.

My question is, is this metric -- the per capita metric -- to the extent that it is embraced by the Action Plan -- limited to the electricity consumption alone, and if the answer is yes, what does that say for us on the Integrated Energy Policy Report, which is much broader than electricity?

COMMISSIONER GEESMAN: That we've got more work to do.

CHAIRMAN KEESE: I have previously characterized the Energy Action Plan as an attempt to get the low-hanging fruit.

MR. ABELSON: But is it in fact limited to --

CHAIRMAN KEESE: Yes it is. But, as Commissioner Boyd said earlier, we'd invite all of you to the AB 2076 hearings that we'll be conducting on Friday for the transportation element.

COMMISSIONER GEESMAN: Or there's another -- somebody help me here -- July 11th to discuss transportation.

CHAIRMAN KEESE: The Energy Action Plan is not comprehensive. It is not intended to be comprehensive, and will not be expanded to be

comprehensive. It was a start, again, for the low hanging fruit. The major work on the integrated plan is taking place here.

MR. SCHWARTZ: Okay. If there are no other questions I think we can move on to the next panel. I think we can probably skip the break, and by doing so we can stay on schedule and maybe finish up at a reasonable hour. So, will the new panelists come up, and the old panelists --?

This last discussion will be on delivering energy efficiency more effectively. And we have one new panelist up here, and that's Bill Miller of PG&E.

MS. BENDER: Are you ready?

MR. SCHWARTZ: Yes, we're ready. Go ahead, Sylvia.

MS. BENDER: The last topic. And I must say, I certainly appreciate how much discussion has come from this. We were hoping to get a lot of good feedback from people, and I think we have. And I certainly am appreciative of you all sticking with us.

One last topic that we'll look at now, at the organizational, administrative-type level, and the program level, to talk a little bit about

delivering all of this more effectively.

And again, what we did here in this section of the report is try to look at some other options from some other places, just to get a sense of what other parts of the country may be doing.

There are a number of studies that have appeared so far. There are comparisons of surveys of different types of administrative possibilities in different states. Essentially, they break down into three distinct areas -- independent administration in Vermont or Oregon are good examples of those kinds of things. Where some independent entity, a non-profit perhaps, is charged with delivering energy efficiency public benefits.

Another option, investor-owned utilities, and this might be a vertically integrated utility, a more traditional utility, Florida and Colorado are examples of that. It could just be a distribution utility, which would be an example of Connecticut, New Jersey, Massachusetts.

The third option is some kind of government administration, and again these can

vary. New York has a semi-independent system, Wisconsin specifically a state agency doing administration of public benefit programs. So a number of different kinds of things.

What we attempted to do in the report was not so much to pick an option that might be an administrative format that we would go with, but to talk more about what such a structure would look like, what would be key components of it no matter who is in charge of the actual administration or how many administrators there might be.

But we identified a number of characteristics that we thought were key. Multi-year programs being the first on the list. A diverse set of program implementers. There are a number of reasons for having things done at different levels perhaps that can maximize the delivery of efficiency.

Support for innovation and even some tolerance for risk for failure within a portfolio to try and get at some new ideas. Administrative incentives that are tied to both short-term and long-term goals. Inclusion of all components of the state's public benefit programs in a

collaborative planning process.

Right now, things happen piecemeal. Not all people who are involved in delivering public benefits are at the same table. Independent evaluation that incorporates both savings measurements -- going back again to the more research acquisition-type rigorous evaluations -- as well as the notion of continuous improvement of programs.

And last, strategic research that responds to changing market conditions. This could bring in, again, some of the social science research that we tried to highlight earlier.

In looking at some of the things that we have now, in terms of programs, we have a mix of both resource acquisition and market transformation programs continuing now.

We have some statewide programs where utilities are charged with, all utilities in California are trying to deliver a similar program, similar incentives, similar structure, as well as local area programs that are designed for a specific audience that may be trying to reach a slightly harder market, reach a rural community, reach a particular language group.

But whatever, there is a widening mix of programs which we think is a fairly healthy situation. There's also an emphasis now on collaborative processes.

Whether that might be utilities working on the side with local people or at local communities or non-profits, or collaborations that are taking place even between PIER and utilities to demonstrate new emerging technologies.

The schools market is another example, the collaborative for high-performance schools is a perfect example of collaborative of state agencies, utilities, and local government working together.

Municipals have authority for all the elements of the public goods program. They're doing renewables, they're doing low income, they're doing R&D. We might be able to take some lessons from some of the things the municipal utilities out there are doing.

And last, we have an energy efficiency best practices study now underway under CPUC authority. And I think this will be another place that we'll be able to get some good direction on what should be the program proponents, and what

aspects of programs work particularly well.

I want to highlight too a number of other studies that are going on that will fit with improving programs at this point. The PUC also has a new evaluation framework study going on, so the timing of this is very good.

What kind of evaluation do we need moving ahead? What kinds of new cost tests do we need? We need to update a lot of things that we haven't done for a long time. With all the new players that are out there delivering programs we need to have some standardization of how things are evaluated, how incentives are set, and we need to have a sense of how to get from potential to the program level.

And this is another study that's coming underway. So I salute the PUC for having a number of things in place now that I think will help us move down the road to more effective realization.

To sum up the findings in this section, then, for the panelists to begin. A combination of administrative models may be appropriate to achieve different policy goals. The form of administrative stretch here may matter less than a clear and consistent commitment of policy makers

and linkages to system planning processes.

An improved coordination is needed in the way programs are designed, delivered, and measured.

MR. SCHWARTZ: All right. Thank you, Sylvia. Let's start out with our newest panel member, Bill Miller.

MR. MILLER: Bill Miller, Pacific Gas and Electric Company. I summarized what I thought were three important attributes or characteristics around this question of administration.

I thought, if this was going to turn into a debate around utilities, I know there's going to be other forums coming up that perhaps Jay might address where that's probably better done. We can do some of that, but I thought I'd offer these four ideas that to me would make the entire process more effective. And i summarized them the following way.

The first has to do with stability. That is, if you look over energy efficiency in California since 1997 what you see is chaos, and changes of directions, and changes of policy, and you have not seen stability in terms of the goals in terms of administrative arrangements.

You've seen funding cycles that were generally less than a year, approvals that were generally less than a year, in a few cases they've reached a year. But that stability of that environment is absolutely critical to achieve efficiencies potential.

The next category or word that I came up with was the word flexibility. That is, within that kind of a stable arrangement or framework, those responsible for particular actions should be held accountable and they should be held accountable in terms of results.

And within those criteria, or within that kind of a framework, they should have flexibility to achieve those results. So, for example, if it's a utility, and things are going well in one program, they should be able to flow resources to that program to continue to realize that success.

And if there's another area or another program or another market segment where things have not been as successful, where some unanticipated barriers have come up, then they should be allowed to step back and regroup and redesign and come at that from another angle in

another way at another time.

But with that kind of flexibility you could really take advantage of what was working and move most quickly to capturing the kinds of goals that need to be captured.

The third item -- I couldn't think of a good word, I came up with the word coherence -- but what was in my mind -- and was actually referred to by the gentleman from EGIA earlier -- but the example in my mind was the demand response programs from 2001, where I think there were ten eleven, or a dozen demand response programs.

And in fact the feedback that I got from our folks who talked to customers was, generally speaking, customers were confused.

So that the structure has to be designed with coherence and clarity of roles so that in fact when customers are approached at whatever level, you know, whether it's Bill Miller gets something in the mail in Berkeley or Chevron Refinery gets something, that in fact it works for them, it induces them to take action.

How they can take actions is clear, the consequences of those actions are clear. They are not confused by conflicting messages, they are not

confused by conflicting programs or activities coming at them from different directions. In fact, as much success as we saw in 2001-2002, if we had had greater coherence we could have had more success.

And the last item is I think we have to get -- and I know if it's in the Energy Action Plan, but I know there's not 100 percent agreement around that, if you were to hold collaboratives you would find that out quickly -- there is not 100 percent agreement around the whole issue of incentives.

Whether it's utility incentives, whether it's a city hiring a contractor and what that contractor can earn. I think we kind of need to get clear about where we are on that, and then a number of things will fall out. But to the extent there's confusion around that, I think basically it's demotivating to a lot of folks who participate in this industry.

So I thought those were sort of the four things that would make for more effective delivery, would make improvements, would allow us to realize the kind of goals it sounds as if we're going to have set for us.

MR. SCHWARTZ: Thank you, Bill. Mike?

MR. MESSENGER: I'm going to try and address the topic of what could we do to achieve more energy savings more effectively. By that I mean not necessarily throwing a lot more money at the problem, but just actually achieve more with the same amount of dollars.

And there's basically five policies that I want to recommend that we should consider. And I'm going to save the hardest one for last, that has to do with administration. So I'm going to do what I think are the simple ones first.

The first one is that it might be a good idea for the state or the Action Plan to adopt this relatively simple policy, I think, which is that electricity prices should reflect the cost of generating, delivering, and delivering electricity to customers on both a daily and a seasonal basis at the class level.

And what I mean by that is that we move towards a system where customers have a choice of selecting rates where they have to pay, you know, higher prices when electricity is more dear, and they cost more to deliver, and lower prices when

it's not.

Or they should be given the choice of essentially paying a flat price, but paying a hedge premium for that if they want, for example, two years of flat prices or five years of flat prices, and essentially have to buy that guarantee in the marketplace.

And this allows them to choose how much of the risk of future price increases they want to leave with the utility or accept for themselves.

And I think that would have dramatic effects on the types of energy efficiencies -- both actions and investments as well as behaviors you would see -- if people had to actually pay for the cost that it's actually costing the utility to deliver the energy. And as of right now we don't have that system, and chaos -- at least partially -- is a result of that.

I think the second thing is that we should adopt a long-term policy, and I say long-term because there's going to be a lot of things that will have to be done to make this happen.

Where customers can opt to have electricity bills delivered to their house that give them an accurate picture of both how energy

use varies on a daily or seasonal basis at their business or household, and that gives them an idea of the appliances or the end-uses that make up that daily or seasonal energy load on the system.

And the reason why I think that's so important is we're sort of at a crossroads here with respect to billing. An increasing number of customers are choosing not even to get a bill, but to have automatic payment.

So they don't even look at the components of their consumption, or whether it was 80 dollars or 60 dollars or 120 dollars. It just happens automatically, it's just debited off their checking account or off their Visa bill.

And while I assume for some customers that's just as a matter of choice that's what they want to do, I think you need to balance that, sort of, it's not big enough to merit my attention perspective.

Where the other side of the coin there are customers who do want to know more about their bill, and what appliances in their house make up the majority of their bill, and I think the irony is that that technology is available, but because of extreme constraints that exist within the

utility systems in terms of being willing to actually change the way that they bill their customers, or even change the format of their bills, it isn't happening.

So whereas in other industries bills are getting more customer friendly, I think the bills in the utility industry -- and this is not all the utility's fault, by the way. There's a lot of other things that have happened along the way in terms of regulatory requirements about the bill.

If I look at bills, I think my utility bill is one of the least customer-friendly bills of all the bills I get. And I think that's a bad thing.

Finally, I think, in general, program administrators of whatever kind of program should be paid, at least 30 to 40 percent of their compensation sheet, based on performance. I think the problem that we have in California today is that in some cases people are paid on performance and in other cases they're just paid fixed costs plus expenses.

And if you're in a situation where you want to try to achieve more kilowatt hours with the same amount of funding, which may be where we

are in this era of budget crisis, it's really important to focus on performance.

Because if you don't it's not likely that you're going to achieve any significant increase or bending of the curve so to speak in terms of energy use per capita. So that was the four easy ones.

Now let me talk about the fifth one which is a little bit harder. In California we've had -- I'm going to call it a hiatus, for the last five years -- on the topic of who should administer public goods programs. And it's gone back and forth.

There's been the formation of boards and agencies to try and figure out a different way. There's currently legislation pending to try and do it in different ways.

And I think the reason for that is twofold. One, it's perceived as a zero sum game, so everyone's competing for the same amount of dollars, and they perceive that dollars to them is better than dollars to someone else.

And two, there's confusion about what it means to be a program administrator. And I think there's been a certain amount of crossing of

roles. There's been regulatory agencies that have become both policy-setting organizations and administrators.

There's been vice versa. There's been utilities that have essentially become policy makers in some sense by setting up programs. And there hasn't been a clear discussion at the beginning of any planning process about what the roles and responsibilities are of each of the players in the system.

And what that tends to generate is a lot of resentment about, well, this is my role no this is your role.

So I would suggest that the best way to try to make sure that we achieve more effective administration over the next five years is to make sure that, before we start any more planning processes and start arguing about dollars and where the dollars should go, we be pretty clear about five functions and who is responsible for each of these five functions. And I'll just list the functions right now.

The first one is governance or setting of policy goals. Who's responsible for that? Is it the legislature, or is it the energy agency, or

is it a program administrator or a set of program administrators? And I think you get different answers depending on who I talk to. Is it the Energy Action Team? That might be the place where the goal should be set.

The second function is the function of portfolio management. How to allocate dollars between different kinds of programs to achieve different kinds of policy goals. And you need someone who is fairly experienced there. And again, I think there's some confusion in the marketplace about who has that job currently.

The third set of functions that I think are important in any kind of energy efficiency enterprise is actually delivering the programs to a set of customers.

You need contacts, you need to know how to work with the trade allies, you need to know how to manage contracts to make sure you don't have cost overruns, all those types of things.

Those functions have traditionally been with the utilities, but in some cases they're now being contracted out to third parties. So, again, we need some clarity as to who's responsible for those.

And then I think the last thing where there needs to be some clarity is who's responsible for internal evaluation and who's responsible for external evaluation, and let me be clear about that.

Internal evaluation is simply who's responsible for monitoring whether specific programs reach their targets, met their goals, led to satisfied customers, and how can we improve those programs over time.

And traditionally those functions have been fulfilled by either utilities, third parties, or in some cases energy agencies. And again I think it's important to be clear about who's responsible for that function.

And then the final one is who's responsible for an independent evaluation of the whole system.

And it's only rare -- I count two times in the last 20 years when there's been an independent party asked to look at the entire system from the day that the program is authorized to running the program for two or three years to actually evaluating it, and looking at that whole system in terms of is it meeting the legislature's

objectives when they said let's have public goods funding.

You need to have some kind of outside evaluation of that cycle, perhaps once every ten years, once every five years, and it's not right now clear if that was the function we wanted, who would be responsible for doing that?

And I think if you can get clear on those functions you're going to have a lot better chance of actually increasing the amount of kilowatt hours and kilowatts that you can achieve with a given level of funding.

And if the level of funding is set at $250 million a year, well that's fine. But in terms of improving on that I think you have to sort of get to this more basic level of who's responsible for what, and then encouraging more clearly defined boundaries and teams that work within those boundaries, so that we can get out of the current hiatus where there's still arguments to this day after five years about who's the best, what firms have the best attributes to be program administrators.

So those are my five suggestions. Thanks.

MR. SCHWARTZ: Thank you, Mike. Jeanne?

MS. CLINTON: This is going to sound like it was set up. I actually have six points to make, we're sort of moving up the hierarchy here. First, I don't think we can just decide in any specific black-and-white way who should be the administrator of these programs.

I think that we have to look at what's the scope of the action we're trying to achieve, what's the nature of the strategies that we're trying to carry out, and then who would be an appropriate administrator or administrators.

And I don't think there's any one size fits all solution here. I think we have to answer some hard questions in terms of will programs and strategies be carried out statewide or not? Will they include municipal utility areas in some way through voluntary cooperation or not?

Are the programs going to work downstream through retailers, upstream through manufacturers, sort of outreached through affinity marketers? And depending on what those answers are, different administrators may make the right answer.

And going beyond the traditional focus

on utilities and CEC funding, we also have the implementation of building standards and how buildings are designed and how code enforcement works, and that's yet a totally different market of builders and code officials.

And, you know, the administrator of those kinds of programs is probably yet a different answer. So I think that all the discussion, particularly during the last two years, over who should maybe be an administrator is really the wrong question.

And that what we should do is say what is it we want, and then set some ground rules over who demonstrates that they have the qualities and abilities to be an effective administrator. And put stress on performance, cost and creativity.

And I would go the next step and say we ought to apply the same criteria to how the state agencies spend money on these kinds of programs. And the money ought to go to those who are effective, creative, and you know, sort of cost smart.

Secondly -- and this will be a very short point -- I would like to encourage us, as we develop our target markets and strategies, to pay

special attention to the commercial sector, not the residential sector. And maybe the hard to reach markets that exist within the residential market.

I think a lot of attention has been focused over the years on the low-hanging fruit. And I think if we're going to make significant progress we have to focus on where the action has not been happening and really dig in there.

Third, on delivery strategies, I'd like to echo something that Mike said, which is we don't necessarily have to throw more money and higher rebates in order to get the penetrations that we're going to be seeking. We have to be smarter.

And there are ways to have cohesive strategies that sort of piggyback on the way business channels work, and the way decisions get made, and it doesn't always have to be about throwing greenbacks at the solution. So, I think we have to focus on what the buyer needs in order to make a decision to accept a technology or decision.

That may mean different kinds of outreach, different kinds of marketing, pitches to

different levels in organizations. Particularly when you talk about the commercial sector, we all know that there are multiple levels, from the CEO and CFO down to the procurement manager and the facilities manager and the building engineer and the -- you know, we just have to think about how do we smartly get those decisions adopted.

Thirdly, I think this is part of my third point. We need to look at -- and I don't say this from a self-serving perspective. We need to look at the role that financing could and should play as an alternative or a complement to incentives.

I know there's a great distaste for getting involved with financing programs because they're complex. But there are some times where financing, even without cash flows or creates positive cash flows, and those are important parts of decisions for some of the target markets.

Fourth, I will speak as a former staff member of a local government that got one of the third party contracts a couple of years back. And I've also worked in utilities, I've also worked for government.

And my perspective on this role of

what's the role of local governments and community-based organizations in delivery of programs is that those kinds of organizations may be excellent at identifying opportunities and rallying participation. It does not mean that those kinds of organizations are the best administrators. Other parties than those may have important program design, energy performance, and skills and knowledge of delivery channels.

And collaboration is probably going to bring a better overall result. I also would add a footnote that I didn't think that issue has to be viewed as a policy issue. I think it's really an implementation issue.

Sixth point is on the question of paying performance incentives to those parties that are carrying out these programs. Allowing some kind of profit or incentive tied to the administrator's performance may be okay. But it may not always be necessary.

Which case it is depends upon the reasonableness of the implementers sort of embedded or baseline costs, and the extent to which the performance has to be financially incented. For example, it might make a lot of

sense to incent a low-cost provider, but not a lot of sense to incent a high-cost provider, just in a generic world.

Finally, I think that in terms of developing the strategy that articulates how we get from the goal of getting to the moon to actually getting to the moon is going to require the development of a statewide, coordinated set of strategies for implementation. Both the nature of the delivery systems as well as for the spending levels.

And that this is long overdue. I started working at the Energy Commission in 1976, just didn't stay forever -- and that's not a dig. But what I'm saying is this is an issue that's been around for more than two decades.

And I would also say that let's make sure that we're not limiting this discussion to the state agencies, and we're not limiting this discussion about strategies to just utilities.

That we have to, again, include all the critical stakeholders -- manufacturers, retailers, builders, service companies -- in some sort of sensible form that targets the right audiences, the right sectors, and the other relevant folks

that need to make this all happen. Thank you.

MR. SCHWARTZ: Okay. Jay is our stalwart on all three panels. You get the last word.

MR. LUBOFF: I'm afraid I won't be ranging as far as some of the other folks have done in terms of this issue because we do have a rulemaking on energy efficiency that's looking at specifically the issue of administration, and so there will be testimony and a record on that that the Commission will look at at some point.

I will say, in terms of administration, that we have a new situation, in that AB 117 has authorized the Commission to develop rules for the community choice aggregators at the local level, who may be the "administrators", the legislation talks about.

So you do have right now a situation where the IOU's are implementing programs statewide, and some local programs. And then you have non-utility parties working through utilities administering other programs at the local level, and you get into some definitional questions of who's administering, who's implementing.

And then you do have this new issue

coming up with community choice aggregation. However that falls out, this issue's been around a long time and I guess I won't address that any further.

In terms of incentives for providers, at least what we've seen in the procurement rulemaking at the Commission, some workshops on potential incentives for procurement energy efficiency, and at least one proposal from one of the utilities in their procurement plan to implement an incentive process for energy efficiency.

Presently we're operating from the AEEP, Annual Energy Earnings Proceedings, and there are energy efficiency incentives for utilities in general for that.

In terms of the overall question here, delivering energy efficiency more effectively, you know, there's different ways to look at this. And this is very personal, but when you've got the per capita energy use as the lowest in the nation and, you know, you're really out there, then we're probably doing a pretty good job in general, I would personally say. Can it be done better? Probably yes, anything can always be, you know,

grease the wheels.

I won't go any further in how to do that. We do have another study besides the potential study in looking at these global issues, we've funded some studies. And one of them is a best practices study, and that study is intended to break down the components of really good programs for delivery.

What's a good marketing program? What's a good administrative program? What's a good incentive structure or innovative way to get to people? And we're looking nationally at that, and ending up the end of the study with an online database which program conceptualizers and innovators, etc. who want to offer programs in the state of California can look and say "well, there's really a good piece of their program" and try to put together the best possible programs.

So, from a delivery point of view, which is the topic here, we're very focused on that. Because last year we saw, from non-utility participation alone, three hundred proposals from folks who wanted to do programs. And the extent we can give them any resources the Commission is trying to do that.

We are aware in the Commission, the PUC Commission, other states, the different models that Sylvia mentioned, and I guess, as I said, we'll have to see what happens in the rulemaking or what record comes out. So --.

MR. SCHWARTZ: Okay. Are there any questions of our panelists?

CHAIRMAN KEESE: Let me ask, phrase a question with a little -- I'll get a little personal too to start with. In some of the national forums that I've operated in, working with the Department of Energy, which at that time we felt had a program a week. Or perhaps it was only a new program each month.

But generally they had overlapping programs that did the same thing. They'd announce one in one month, and then three months later they'd announce another program that was the same thing. And organizationally we suggested that the department should get behind Energy Star, which was an EPA program, and brought some uniformity across the boundaries.

I happen to live in a remote, isolated community. And my experience abut a month ago was to walk into a facility that had 50 brochures.

They were pretty old actually, but they were PG&E energy incentive programs that were out of date. The area where I picked this up is serviced by Sierra Pacific Power. Everything around the area is served by a rural electric cooperative.

There isn't a PG&E customer within 75 miles of the location of this site. All our media is newspapers from San Francisco, which cover incentive programs, newspapers from Sacramento, which cover incentive programs -- again, none of which apply in the area in which this media comes.

Most of our TV is dish or cable from LA markets and San Francisco markets. So my question would be if -- and then, unfortunately, Mike, we do sign up for automatic payment from our bill so we don't get anything from our utility.

Recognizing that that's taking place, is there discussion about having a uniform program in the state so that this confusion of incentives doesn't take place. Because I know in our area there is total confusion. I get asked the question about these incentive programs that are incentive programs somewhere, but not in the area in which we live.

MR. SCHWARTZ: Everyone's reaching for

the microphone. Mike, go ahead.

MR. MESSENGER: This problem you mentioned is real, but I think there's been a lot of things done in the last four years to try and deal with the problem. I'm not sure if it could ever be solved. So let me describe what's happened.

Way back in 1997, when the California Board for Energy Efficiency was first founded, there was a strong call to have statewide programs with uniform rebate requirements. So no matter where you lived, if you were in one of the IOU's you could get the same level of rebate for the same dishwasher or whatever.

And it took awhile, but I believe after two years many of these programs became in fact statewide programs that were seamless, that had the same rebate level for the same type of equipment.

The problem is that that works for the mass market for certain appliances, but for other markets where temperature is a big factor or where the variability of the actual premise, in terms of a small customer facility or industrial facility is such that you can't have those uniform levels

anymore.

And so my guess is that something like 30 to 40 percent of the programs these days are in fact statewide and offer statewide benefit levels. But it doesn't deal with the problem you're talking about, what happens if you live in a small muni or small rural cooperative type place and you're not connected to the IOU's. There's no statewide program there.

I believe that there have been attempts to try and set uniform levels among the larger munis and utilities with some success. So, like SMUD and LADWP. But I don't think the small munis have ever signed into that program, and I'm not sure exactly why.

I think that the broader point that you raise is something that I think Commissioner Pernell mentioned earlier, which is there should be some way to get a statewide message out that's fairly consistent about the different types of programs, and a place that you can access information regardless of what utility serves you in the state of California.

And I think Flex your power was the beginnings of that. Mr. McGuire worked hard to

make sure that all of the utilities were on the same wavelength with respect to at least the marketing.

But to date I don't think there is any strong mandate from the legislature or any other actor that says try to make sure that for all customers there's a uniformity of offers and one consistent media outlet, whether it be radio, TV, newspaper, wireless, internet, that type of thing.

I think it's a good goal, but I would guess it's at least three or four years from now until it might come to fruition.

MR. MILLER: I have a different view. I think that the standardization that Mike refers to was essentially completed, perhaps a year or so ago. That, from the customers' perspective, the rebate levels for essentially all the programs that gave rebates, and many of the other programs as well, and many of the actions in the other programs were essentially identical.

They're probably are still some differences in terms of -- well, I think, actually, in many cases we use similar audit software, although I think there are some differences there as well.

But I think if you look at the rebates that have been set for residential appliances, that have been set for medium and small non-residential customers through the express program and the standard performance contract program you'd essentially find similar numbers. Identical numbers for identical actions.

I think there could be a few measures that individual utilities add because of their specific territories. I know there's been a lot of discussion about whether that was possible or not, because Siskiyou County does not look like San Bernardino County.

And going to this statewide uniformity there's been a tension around that, and how to address that. But I'd say that we were at 90 to 95 percent, in terms of my response to Mike. We do, to the extent that it is possible within a program, check addresses.

So your neighbors will be disappointed in that they are not contributing to the public goods charge that eventually ends up with Pacific Gas and Electric if they're in one or the other service territories something else is happening. If they're in a muni there is a parallel financial

arrangement.

And I don't know about some of the fringe utilities, like Sierra Pacific, etc. Jay may know some things about that. But there's nothing that prevents an owner of a store in Marysville to drop off a box of brochures at his branch in your store.

CHAIRMAN KEESE: Well, I agree. I'm just wondering if -- I guess my question is is there a benefit from uniformity, have people looked at whether there's a benefit from uniformity.

MR. MILLER: Well, as Mike said, there is a perception that this difference -- these differences, there were lots of them. We essentially ran independent programs for years. That was a major issue, and essentially things have been leveled out. And there was a lot of discussion and debate back and forth around that.

Now whether that ultimately was a good thing I don't think anyone has sort of questioned the assumption that it was necessary and has been accomplished. There actually is the beginning of a discussion on the procurement side as the three investor-owned utilities that I'm aware of have in

fact different resource bases and different needs.

And, you know, to what extent that's going to bring that issue up again, because if it's got a different need in one service territory as to another. So it's not that we're done with this problem, it's not that we're done with this problem for sure. I think that covers it I think. Or maybe Jay --?

MR. LUBOFF: Yes, I'll jump in a little bit. I think that Bill mentioned that for many years there were independent programs on the IOU side of these, then over the last several years the IOU's are pretty much operating 14 major, statewide programs. So that's one side of it.

This hearing, and this process here, is looking at statewide and munis and coops and etc. And to the extent the PUC has been involved, it's been involved mostly with the major IOU's in levelizing those programs. And if you go to Los Angeles -- well, not to Los Angeles -- but if you go to Laguna Beach or you go to Marysville you're going to see the same incentive offered.

There may be some differences, but they're very rare. There's only one program, as it turns out, where incentives are different

statewide, and that is the Energy Star program. Because on the coastal level there are no incentives for certain type programs because of the coast. That deals with one set of issues.

The other set of issues for smaller utilities like Sierra Pacific and PP&L, and etc. We, the Commission, has been focused on the PGC funds on the major utilities, but when the legislature passed SB X15 there was funds for those smaller utilities, and there was no -- I guess it was a one-time shot -- so there was no attempt to coordinate.

But I guess if there was more of a policy framework you might see more of that. I don't know how that would affect the coops, but --.

CHAIRMAN KEESE: Well, I don't see us in the IEPR process getting involved in the particular activities of the PUC in this area, which are pervasive. I mean, you cover 70, or if you add the munis in say 90 percent with your program. So I'm wondering what we should focus on in this particular area.

MR. MILLER: Well, I don't know what issues it would bring up, but actually we have had

some discussion with the munis at various points in time in terms of bring about, and we've had different kinds of responses back.

And I think they are required to collect a public goods charge. They have a list of things on which to spend it. The rules are somewhat different in the sense they have more fungibility in terms of the money than has happened with the investor-owned community, but it does exist.

So I don't know what kind of -- you asked the question what is the benefit from this standardization -- and if it were known to bring everyone on line would yield big benefits, then perhaps that would be something to consider, but I couldn't say that I would be recommending that based on what I don't know.

MR. MESSENGER: I guess the only other thing I can add is, working with the demand response program with a variety of small commercial and medium commercial chains, they have always said to us that it's a benefit that from their perspective our program is in fact statewide.

Regardless of what chain store we're talking about it's the same set of requirements

and the same set of rebates, so they perceive a benefit at least in terms of standardization of that type of program.

What's not known is that the downside of any attempt to standardize is the opposite side of the card, which is there's disincentives to innovate. It becomes much more difficult for people to innovate and offer a new technology.

Because let's say, for example, PG&E wants to give a rebate for some new heat exchanger or something like that. Well, if the other utilities aren't on line and don't think that's a good idea it takes a lot longer to get that rebate into the system.

MS. MOTAMEDI: Lainie Motamedi with the CPUC. And my question is just a general one about the IEPR process and then also this report we've seen today. To what extent is the CEC planning to fold in key findings and learnings from the munis? At least the larger ones, for instance.

Because primarily we've been talking about the IOU's and the information that we have about PGC programs and fundings, and residential versus commercial and etc., and in an effort to look at innovation and collaboration, I'm curious

as to how much more we'll be seeing about the munis in this state.

MS. BENDER: As I think I said way in the beginning, we're still trying to complete some of the data collection from 1999 coming forward. A lot of that has to do with program results from munis. In fact, one of the things I did for this was to try to look for as much information as I could find on different kinds of muni programs.

And I had a real hard time finding anything like a report that would document what had been done with PGC funds. I could find quite a bit for SMUD, but not too much for some of the others.

And we had done a survey inside the Commission in 1999 that looked at a sample of munis across the state, trying to get a handle on what kinds of programs were being offered, and what was being spent in different ways from public funding.

But that's really about all we have right now. So we may need to search for more. We would be willing to add more things into it.

MS. MOTAMEDI: So is it part of your plan to contact SMUD or LADWP directly?

MS. BENDER: Again, we're trying to keep the report at sort of a policy level. So I don't want to go into a lot of detail about program, but to be able to summarize better probably what the full picture of what the muni situation looks like it would be useful, but as I say we don't want to get down to individual program details.

Though we are trying to add all of that into our ongoing database, where we keep track of all of this in terms of the savings.

CHAIRMAN BOYD: But if my memory serves me right, we took upon ourselves the responsibility to add the muni component to the equation, recognizing nobody else was going to be able to do it, so we are attempting to do it.

I keep writing down issues and then scratching them out, because there isn't complete agreement on whether there are lack of standards or not lack of standards. So I think we and the staff are going to struggle a little bit with this question, because early on I heard Mike say there does seem to be a lack of standardized approaches, and I wrote that down.

This is a policy report, that's a policy issue that wasn't agreed to by PG&E, and I'd

scratch it out -- well, actually I didn't, but I just put a question mark. It just sounds like there's a little more mining of knowledge and sharing of information back and forth needs to take place before we decide whether there is a hyper-level issue that needs to be addressed.

And the other part of this that does concern me some is I'm a disciple of the school of organization and reorganization that says -- and this is just speaking for me -- decide on the program you want to carry out, more or less, and then decide what kind of administration, organization, whatever it takes, to do that.

I don't -- I was hoping that would occur on the larger issue facing all of us, but the legislature is showing its impatience with the time that is passing, and I don't know what will happen.

Maybe my term will be over, and I'll get the hell away from here before it hits the fan. But in any event, on a microscale basis, and that applies to this issue, and I think I heard Jeanne say something to that effect.

So it looks to me like in this area we've got to wrestle with more data collection and

knowledge to decide whether or not there's a policy issue and an administration of policy issue to refer to higher authority.

And in concert with that we have an obligation sometimes to say there's a problem and here's a possible approach that should be taken to curing it or solving that problem. So you're going to have to wrestle with this for awhile I think.

MS. MOTAMEDI: And from the PUC perspective, we would greatly appreciate it. Because there may be learnings out there on a high level, on a policy level, that we can fold into our procurement process, the energy efficiency process, with a better understanding of what else is going on in the state.

CHAIRMAN BOYD: Well, I think, for instance -- and again, if my memory serves me right -- within the discussions we've had with those members of staff dealing with the collaborative components of the procurement process, the muni issue also arose as to, you know, we need basic data in order to understand the whole state.

So, again I think the CEC -- and it's

too bad Karen's not here -- but I think we took it upon ourselves to try and mine that area as well in order to fill out the equation. So we're all working together.

MR. WORRELL: Eric Worrell. And I'm going to speak as a homeowner who moved into a house two years ago that turned out to be a lot less energy efficient than I hoped.

And being an engineer aware of energy, being much better educated than the average, it was difficult to find the information on efficiency programs. And when I did find it most of the incentives that might have applied to me either did not apply to my situation or had expired already or had limited funds per year. And I'm looking in November and the funds expired in October or something like that.

So consistency, reaching out, getting the utilities to look at the bills and actually call the people who need the help. You know, you're looking at a home that's in the third tier in an all-electric neighborhood, there's something wrong there.

But the standards that work are the ones like when you go to the store and the rebate is

already applied to the price of the fluorescent bulbs. When you buy your refrigerator and you get the rebate certificate right there. That kind of thing works.

When you get 50 cents per square foot when adding windows to your house, and if it takes more work to do that -- I could put a radiant barrier in my house for less time than it would take me to get a contractor, and I get no incentive for that, that's the kind of thing that I'm not hearing in your discussion of making efficiency work.

MR. SCHWARTZ: Anyone else want to contribute to this discussion? Okay. Commissioner's, would you like to have any closing comments at this point before I thank everybody for coming?

CHAIRMAN KEESE: I'll be very brief, and let Mr. Boyd close this. But I thought the staff work was spectacular, the presentations were great, and the participation was excellent. So, I'm very pleased with the day we've had.

CHAIRMAN BOYD: Well, I will just ditto those remarks. I thought the staff's draft report for this particular workshop was particularly

well-written, and I wondered if we could, you know, kill a day.

But the very significant audience participation, and the excellent job done by the panel members, has filled out the day quite well. And actually turned over a lot of rocks out from under which additional problems have crawled.

And that is the purpose of a public workshop. So, this has been a very good workshop, and I would like to commend everybody on both the organization and participation. And I look forward to the staff's digesting all this and pointing us in a direction lest we have to do that ourselves.

So thank you all very much. It's been very good.

MR. SCHWARTZ: Thank you. The workshop is adjourned. I also want to thank the panelists for their time and preparation. And thanks to all of you for coming and participating in this workshop.

If you'd like to submit any written comments, please do so by June 11th, so we have time to review them. And as I say, the target date for putting out this report and the other

reports that contribute to the PIES overall report is the end of July. Thank you.

(Whereupon, the workshop was adjourned at 4:29 p.m.)

CERTIFICATE OF REPORTER

I, ALAN MEADE, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 17th day of June, 2003.

ALAN MEADE